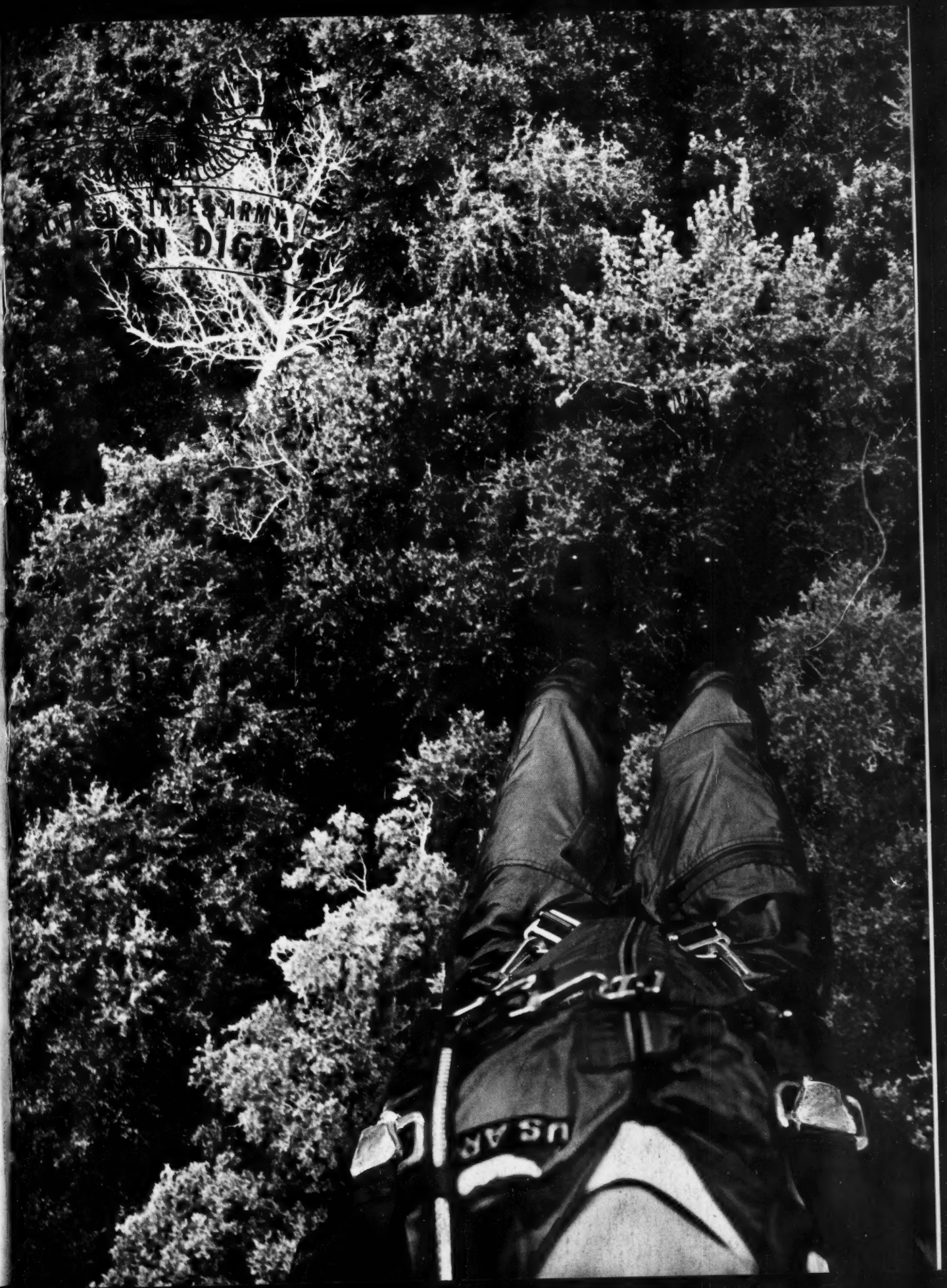
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The mission of the U. S. ARMY AVIATION DIGEST is to provide information of an operational or functional nature concerning safety and aircraft accident prevention, training, maintenance, operations, research and development, aviation medicine, and other related data.

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LETTERS

Sir:

A fresh young aviator is sent into the Army Aviation flow straight from flight school. The first thing on his mind is to fly. He will take any flight in any aircraft—O-1A, O-1E, TO-1D, or U-6A. . . . Then he starts his checkout in the U-1A and finds there is more comfort in flying, and flying takes on a new light. In the meantime he gets his first ride in a U-8. Again he notices the increase in comfort.

At this point in his career he begins to think about larger aircraft. He starts requesting schools for the U-8, OV-1, or CV-2, depending on his personal likes and dislikes. . . . The O-1A, his basic aircraft, seems to drift into a hazy twilight zone. He is no longer the eager pilot of the beginning. He now tries to wangle his way into getting the more desirable flights in the multiengine aircraft that he is now rated [in]. . . .

He has been so interested in getting more ratings under his belt and finding a more comfortable way of earning his pay that he has pushed the basic fundamentals of combat type, light plane flying into the gray void of declining proficiency in his brain. . . . The treetop flying and short field and road strip work make beads of sweat the size of golf balls stand out on his forehead. . . .

To make the point clear, it is our duty as pilots, if we are in a position where programmed training would be impractical, to keep our proficiency high.

Remember that one poor judgment or a complete misjudgment could end an enjoyable career in a matter of seconds. Let's keep current in our basic aircraft.

IT COULD BE YOUR LIFE.

W. J. KLINE
Capt, Arty

Sir:

I am tired of reading so many articles on survival in the AVIATION DIGEST. Tired because they never say how I can get some decent survival equipment. The articles always contain a nice list of items you should have, but never say how or where they can be obtained or else state that recommendations have been forwarded. I don't believe I could survive very long on a recommendation.

Perhaps it's my fault. Maybe I haven't looked in the right manual (I have looked in many) or maybe I should go out and spend $25 to $50 at the local sporting goods store. I am interested in survival, especially my own and my passengers', but I believe it is time that the Army and Army Aviation came up with something suitable and available. If nothing else, at least [we need] authorization to requisition current Air Force or Navy survival equipment.

I have been able to scrounge from the Navy some kits, survival, personal, type PSK-2 SN R6545-611-0978-LA20 made by Van Brode Milling Co., Inc., Clinton, Mass., which is two pocket packs. I am presently trying to requisition, under Air Force TO 14S1-3-5-1, some MD-1 survival containers with equipment, which fit in the seat and strap on the parachute. I am using paragraph 28d(2), AR 95-1 as authority. Headquarters supply people sort of frowned at this authority but are giving it a try.

I double dare you to cite to me the following: 1. a valid authority for issue of survival kits to Army Aviation units and sections, other than AR 95-1 or a specific unit TD, TO&E; 2. an Army publication that lists aviation type survival kit or equipment that is actually available for issue. I honestly hope you can cite me this information and I recommend you publish it for the benefit of all.

DONALD J. WIEGMAN
Captain, Signal Corps

● *See page 18 for information on how to requisition survival kits through Army channels.*

Sir:

I am on a category III aviation assignment. . . . What prompted me to write this letter was an incident which took place when I tried to exchange a broken pair of sunglasses at the . . . supply room. I was told that they did not give ground duty aviators equipment support, only flying time support. It was suggested that I exchange the sunglasses with my brigade S-4.

When I placed my request . . . with my brigade S-4, he questioned my authority to be even issued sunglasses, as he does not normally handle avia-

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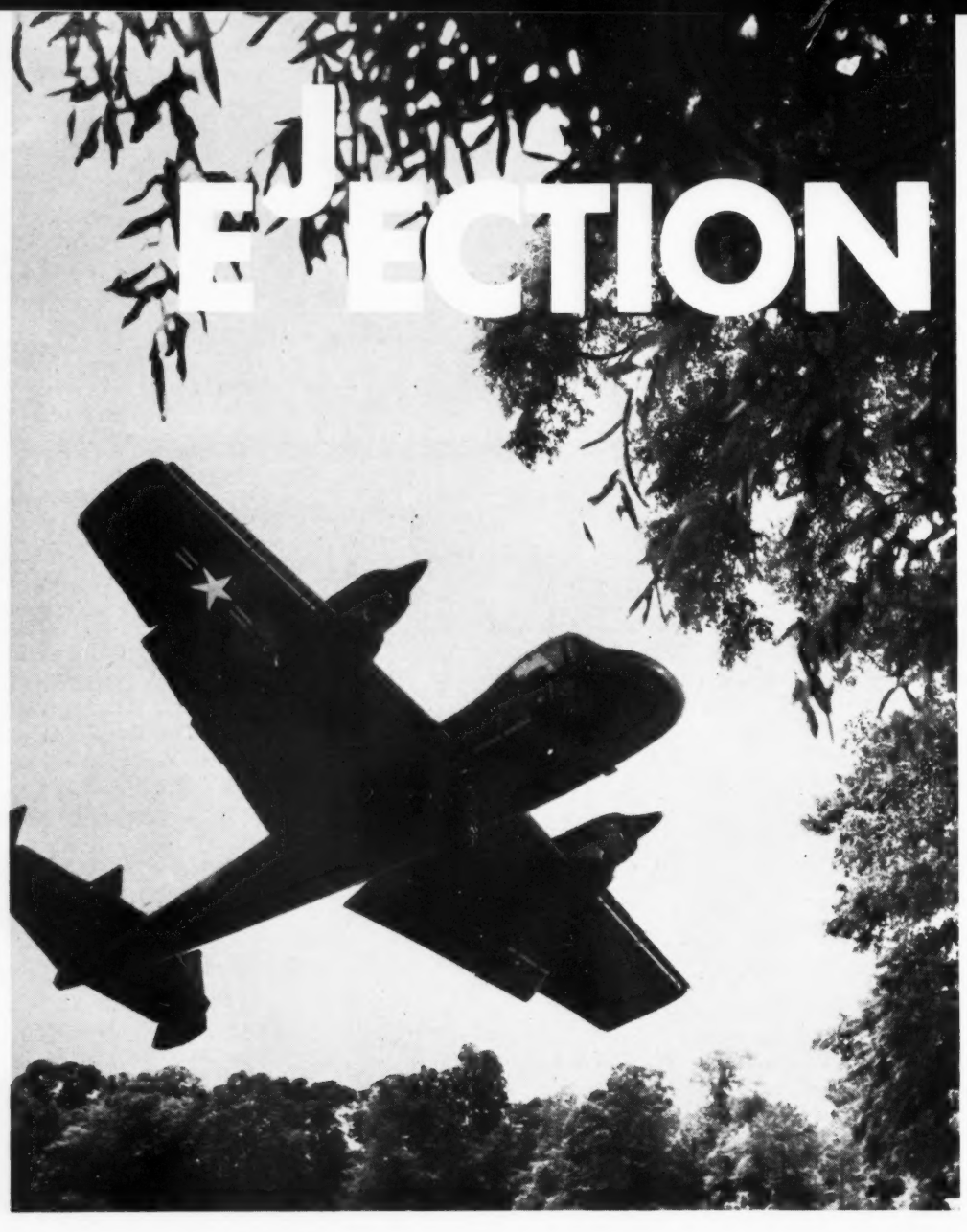


EJECTION

Over E

To inform other Army Aviators in general, and Mohawk pilots in particular, what it's like to eject from a Mohawk over enemy territory, here is my background. I am a little over two years out of flight school, Mohawk rated a year, and now serving in the Republic of Vietnam.

Our unit had been trained in many phases of special warfare, but the one I will deal with is survival. During Mohawk transition, I attended the survival course at Fort Rucker, Ala., an 8-hour block of instruction. Our unit again took this course before leaving for Vietnam. I also attended the Infantry Escape and Evasion Course at Fort Benning, Ga., while I was in OCS. Both courses were excellent and contributed much to my return to civilization.

The survival gear which we normally carry follows. An M-3C lifevest is connected to our integrated torso harness. The M-3C contains a lifevest, two day/night flares, a two-piece PSK-2 personal survival kit, shark repellent and dye marker. We carry in the seat a PSK-2 pack which contains a one-man liferaft, water distiller, day/night flares, signal mirror, shark repellent, dye marker, and food packages. We also carry a survival knife, one-cell flashlight, lensatic compass, and a 45-caliber pistol.

Enemy Territory

Lieutenant Edward B. Cribb

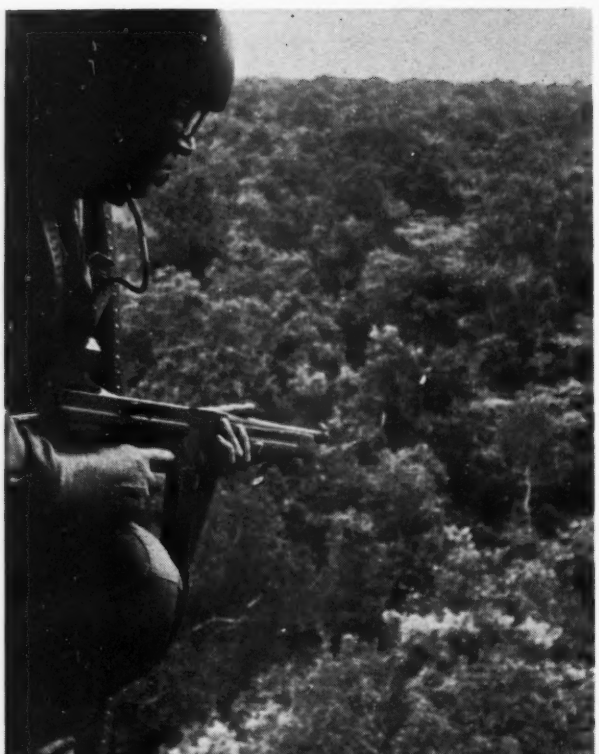
THE DATE was 9 March 1963, 1315 hours. Two JOV-1C Mohawks took off from an airfield. Our aircraft tactical designations were Hawk 01 and Hawk 02; I was flying Hawk 02. We proceeded to the target area and began search for a suspected VC (Viet Cong) regimental headquarters.

I was 200 feet above the very heavy jungle growth, flying up a canyon at about 130 knots with 15° of flaps extended. (This is the only way to fly if you expect to see anything in the jungle.) I added power to fly out of the canyon. The Mohawk was climbing nicely, losing only about 10 knots of airspeed, when the right (#2) engine lost almost all power. I added full power and started to feather, alerting Hawk 01 that I was in trouble. Before I could feather the right engine, it came back on line. I had fire-walled both throttles, but the right engine still did not develop full power. It looked like a narrow squeak, but I would just clear the ridge. Due to the terrain, a turn was impossible. Just then, the engine again lost almost all power. I was below single engine airspeed, had nothing I could drop off the wings, and starting to mush in. Still slightly below the ridgeline, I told my Vietnamese observer to eject. After telling him three times, I decided to set him an example, which I did posthaste. I ejected at 90 knots, slightly below the ridgeline and about 150 yards short of it. The Mohawk crashed and burned.

The only thing I remember about the ejection was what felt like a quick backflip. There was no feeling of a terrific amount of force or any recollection of heavy g loading on my person. I was rendered unconscious or at least dazed, because I remember nothing for approximately the next 1½ hours. During that period, I abandoned all my equipment. All I had on me when I came to was a short-sleeve flight suit and a pair of boots. I don't know what caused the dazed condition. I had no head injury except for an abrasion and a black eye, caused by wearing sunglasses during ejection.

An interesting point: we had been told that a knee board would break your leg in ejection, but this was not true in my case. My ejection was through the canopy because of the limited amount of time, by usage of the overhead firing handle.

Lt Cribb is assigned to the 23rd Special Warfare Aviation Detachment, APO 40, San Francisco, Calif.



Typical Vietnamese jungle like this envelopes the author after his ejection. Survival training saved his life.

Here the training I had prevailed, because I took up a good body position and ejected through what could be described as a reflex action. I was talking to the observer and keying the mike with my left hand and tried to grab the face curtain as it came down. I missed it and suffered a slight dislocation of my left shoulder during the ejection. This was my only injury. I never did feel any soreness in my back.

I was told by others and surmised by evidence that I went to the wreckage and shed my flack vest by the aircraft. The observer had ejected right after me. I helped him get away from the fire. Then I wandered away from the wreck and was lost in the woods when I came to my senses. Examining myself, the only injuries I could find were scratches and an extremely sore shoulder and arm.

I spent practically the remainder of the day searching for the wreck to get my survival gear, but the wreck had stopped burning and I could not find it. I was told later that another Mohawk pilot had been given the coordinates of the wreck and flew over it for 10 minutes without seeing it, and when Hawk 01 returned, it had to make several low passes before the new pilot saw a piece of wreckage. Needless to say, the jungle was quite thick.

Toward dusk, I came upon a stream running eastward, the direction in which I had to go if I were to walk out. I started downstream. Meeting my observer shortly before dark, I showed him a place off the stream to sleep, and told him not to light a fire. He had a nasty cut on his left cheek and seemed to be suffering from extreme shock. Walking off about 100 meters, I bedded down for the night. I separated us because I knew we were in a very active VC area. This was later confirmed when the ground search party found numerous VC training aids and signs.

During the night, which was for the most part sleepless, I heard several groups crashing through the extremely thick underbrush, as near as about 30 yards. They sounded as if they were using machetes. My heart never sounded as loud as it did during their passing. The next morning my observer told me many VC had passed him also.

Just before light the next morning, I decided to climb a high ridge and try to see the terrain. When I finally reached the top, the brush was so

Vietnamese ranger like this one helped rescue Army Aviator from Viet Cong

thick, only light could be seen through it. I returned to the river and found that my observer was extremely weak and could not manage under his own power. Supporting him with my right arm, we started out. The stream was very difficult traveling and we both tired rapidly. About 1300 hours, he gave up completely and could no longer travel. He seemed to have lost the will to live. After much persuading to no avail, I told him to stay in the middle of a small clearing in the river all day and hide at night. I marked the area the best I could and moved onward.

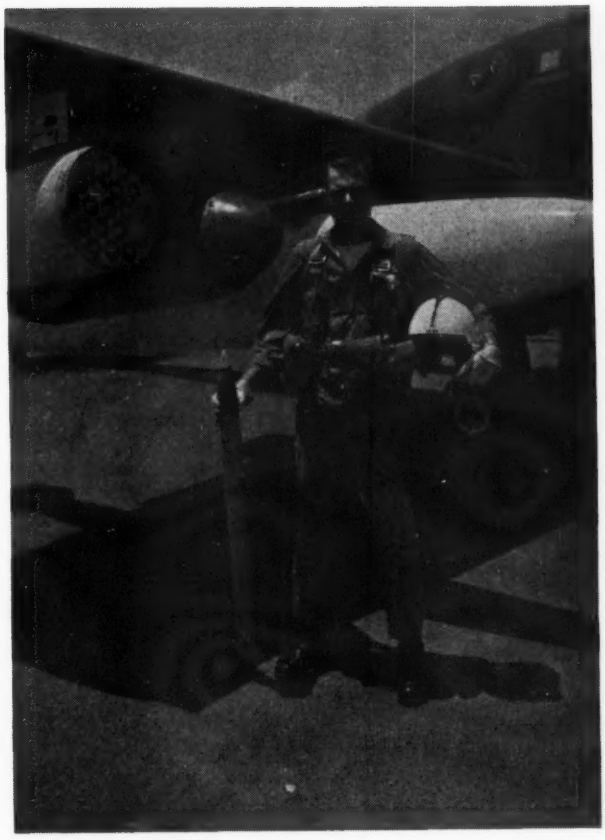
Knowing that this would be my strongest day, I had to make time. The stream was the only mode of travel. Of course the VC also knew this, so I tried to be as cautious as I could. A good cover of aircraft was overhead and I hoped the VC were in hiding. The jungle was extremely thick, with visibility about 5 yards, made up of vines closely resembling concertina wire. The small amount of travel I did over land marked my bare arms up very badly. The jungle was a wall, starting at the river's edge. The river was spring fed and quite cold. It descended very rapidly and was quite steep in places, with a bottom of large rocks and boulders. Only about 100 yards of smooth bottomed easy walking was along the entire 8 kilometers I walked.

I planned to walk until about an hour before dusk and then stop and start a fire, dry out, and perhaps cook something to eat. About 30 minutes before dusk all hell broke loose in the form of a thunderstorm. It moved over me and dumped rain for 3 hours. I had no shelter, fire, or food that night.

During the night, I was introduced to a little fellow called a leach. I guess the rain brought them out. When I awakened in the morning, after a sleepless night, I had about 100 of them on my legs, arms, and body. My legs were a moving mass of leaches. I had no dry matches to apply heat, the best way to get them off, so I had to pull them off.

I again sallied forth downstream. That day was filled with rest stops and sickness. I had been sick all night and it was worse as I walked. I was relieved at one thing, however: no further signs of VC were seen. I hoped I had outdistanced them.

I was sighted by a Marine CH-34 helicopter at about 1100 hours the morning of the third day. I was quite elated, although so weak I collapsed on a rock in the middle of the river. At this time I noticed that there was no lower back to my flight suit. I had worn it away on the rocks. At 1300, I was met by a group of Marines, U. S. Army, and Vietnamese Rangers, who came upstream from some helicopter landing sites. They had a doctor with them who braced my arm.



Author dressed for mission in Vietnam

I explained to these people where my observer was and described the spot. A company of Vietnamese Rangers was sent back; they found the spot but not my observer. He had either crawled into the jungle or the VC had gotten him. We continued down a beaten trail, which they had just made, to the helicopters. From there, I was taken to the 8th Field Hospital.

I wish I could think of some primary important lesson I learned, or could think of some points of wisdom to pass on, but my only recommendation is to keep your head and prevent that old enemy, panic. I have been taught that the most important single factor is the will to survive. With this precept, I most emphatically concur. Also, you may plan far enough ahead to wear a long sleeve flight suit. I was an extremely lucky young aviator. I acted through reflex action. If my training had not been so good, no one can say what might have happened.

GO or no GO

Captain William J. Ballinger

WE ARE ALL aware of our responsibilities as aviators. But being aware of them and practicing them are two different things. In the accounts that follow you will see how easy it was for me to forget them. I don't really enjoy letting everyone know what a jackass I can be, but I hope it will help others to stop and think before making the big decision: GO or NO GO!

We were lounging around in the Officers' Club, at our camp in the Republic of Vietnam, waiting for the movie to start. Convinced that the movie would be lousy as usual, none of us were looking forward to it too much. But it had been a long, rainy, and boring day, and we were hoping against hope that the Special Services Officer in Saigon might have made a mistake and let a good film find its way north.

The unit CQ interrupted our thoughts with a request for an emergency evacuation.

My copilot and the crewchief dashed to the ship to preflight and supervise the loading of weapons, ammunition, medical supplies, and survival gear. Since it was my turn to fly the right seat, I rushed to Opera-

Capt Ballinger is assigned to the 67th Medical Group, Fort Sam Houston, Texas.

This is a reminder to all aviators of what can happen when pride overrules common sense and one assumes "it always happens to the other guy."

tions to doublecheck coordinates, plan a flight path, and file out. Since the weather is always the same during the monsoon season, I accurately predicted thunderstorms and heavy rain. This later proved to be only too true!

I hurried to the helicopter and found everything ready to go, including the Doc. Because of the ensuing darkness and bad weather, I discussed the mission and its hazards with the copilot and Doc. We all agreed that we would give it the "old college try." We'd ignore the jungle and the Viet Cong.

After takeoff, my copilot assumed his role as navigator. With only about ⅛ to ¼ mile visibility, sometimes less, he calmly continued to direct me to the pickup site. During the flight to the area he never once became confused and never missed an ETA for a ground checkpoint more than 40 seconds! How many other aviators could do as well under the same conditions without radio aids of any kind?

Zigzagging on our course and sneaking through saddles and valleys just below the clouds, we arrived at the site. Here we encountered the first foulup of the mission. What had originally been a request to evacuate two soldiers who had fallen into a mantrap turned out to be a Vietnamese captain with the hives and a man with a very minor head wound. To say that the doctor and crew were disturbed would be the understatement of the century! Since we had already gone this far, we decided to take them back anyway.

Our return flight was much the same as the trip in, until we reached the ridgeline blocking the valley. The entire ridgeline was obscured by clouds, forcing us to choose an alternate route home. Let me again emphasize the superior ability of my copilot as a navigator. Without him I am sure I could not have made it back. Of course, Doc helped a great deal with his offer to buy us the biggest martini the world ever saw if we would only get him out of there and back to base camp.

After about 40 minutes of flight, the copilot informed me that we should be only 8 or 9 miles south of home base. I recognized some of the terrain below us (some of it alongside) and agreed that at last we had it made.

Already 01 + 15 overdue I was sure they would be sweating us out on the ground. However, a large mountain between us and home base prevented calling earlier. About this time the rainmaker decided it was time to impress us with his abilities. For the third time during the flight, visibility dropped to almost nothing, slowing us almost to a hover (which didn't help us to forget the guerrilla forces below us).

Finally able to contact the tower I asked for present weather. The operator answered in a very calm, young sounding voice, "Ceiling 1800; visibility 6 miles with scattered rain showers."

Something was wrong somewhere! With 6 miles visibility at the base, we should have been able to see some lights by this time. I called again and asked him to "say again" visibility. The same calm reply.

Beginning to panic and losing faith in my navigator, I asked the tower to "say again" visibility. By now we could be no more than 4 or 5 miles south.

The operator again informed me he had 6 miles visibility, but that a thunderstorm was moving in from the northwest.

Neither my copilot nor I could figure it out. We were beginning to wish we had never applied for flight school. I suddenly remembered that some of the tower operators were brand new and were receiving on-the-job training.

Hoping for the tower operator to miraculously supply us with a solution to our dilemma, I called and asked what time the weather report he had given us was prepared.

"0900 hours Zulu, Sir."

Being too busy and scared to figure out the time difference I literally screamed into the mike, "@#%?/@, I don't give a @#$%#@ when the report

was made, I want to know what the visibility is now. How far can you see out of the tower?"

His worried reply left us nearly hysterical with nervous laughter: "Ah, Sir—I can't see nothing!"

Reviewing the DO's and DON'Ts, I can see that I violated practically all of them. However, the decision to go was based on the urgency and necessity of the mission. The primary error was not verifying the evacuation request. Normally verification is not necessary because requests are generally initiated by a medical officer or aidman. However, when working with other than U. S. Forces, the request channels can and often do become confused because of language problems.

Now consider the same aircraft, the same pilot, but at a later date and a completely different mission request.

Approximately 3 weeks later I was asked by the doctor to take two Republic of Vietnam civilian patients to a field hospital about 01+15 hours flying time from our camp.

After postponing the mission five days because of torrential rain and thunderstorms, it was becoming embarrassing to keep refusing the mission. After all, I was the hotshot pilot that completed one hairy mission, and that was at night to boot! Besides, I knew the route like the back of my hand, plus there were some fortified villages in which to land in case things got too hairy.

So we took off at 0900 hours with the patients aboard. During the first 20 minutes of flight I mentally complimented myself on my superior ability as a weather forecaster. No sweat! Five miles visibility and scattered clouds at about 1,500 feet.

While lost in a daydream (as I remember, it had something to do with the President pinning an ultra-superior aviators badge on me), the day became suddenly dark and the air rough as a cob. Removing my head from its present "locked" position, I saw that we would soon be in the middle of a very heavy rainstorm. No sweat. All I had to do was set down and wait it out. There was a helipad only 5 minutes away.

I made the approach to the pad and was startled when I realized that we were barely moving forward, but the airspeed indicator was running wild, around 40-50 knots. I made it to the ground, shut down, got the patients in a dry building, and got myself a cup of coffee. I noticed that the tin roofing had been blown off a building near the mess hall. Think nothing of it!

After taking off again nothing of importance happened until about 2 miles out on final at destination. Visibility dropped to about ⅛ of a mile, and the tower informed me that the field was

closed and to hurry up. This we did and after landing, unloaded the patients. Chalk another hairy one for the redhot aviator!

The unit operations officer arrived and looked a little disturbed. However, he let it pass with, "-@¢#$%$, I thought you had better sense," and took us to the mess hall.

After waiting all day for the weather to break, I called home base and got a weather report. All clear. I attempted a call to a camp on my route but could not contact them. So I used my superior powers as a forecaster and took off into the gray, with two doctors, one nurse, and two medical technicians.

To make a long story short, the flight back was a total disaster—an embarrassing experience that pains me to think about. As previously stated, the flight should have been about 01+15; it turned out to be 04+45!

Not only was I forced to set down several times, five to be exact, but on the last leg I was forced to fly in weather that was exceptionally hazardous, even for a hotshot like myself.

During the last 30 minutes of flight I matured a good 100 years, but the shameful part of it was that my professional maturity had come too late.

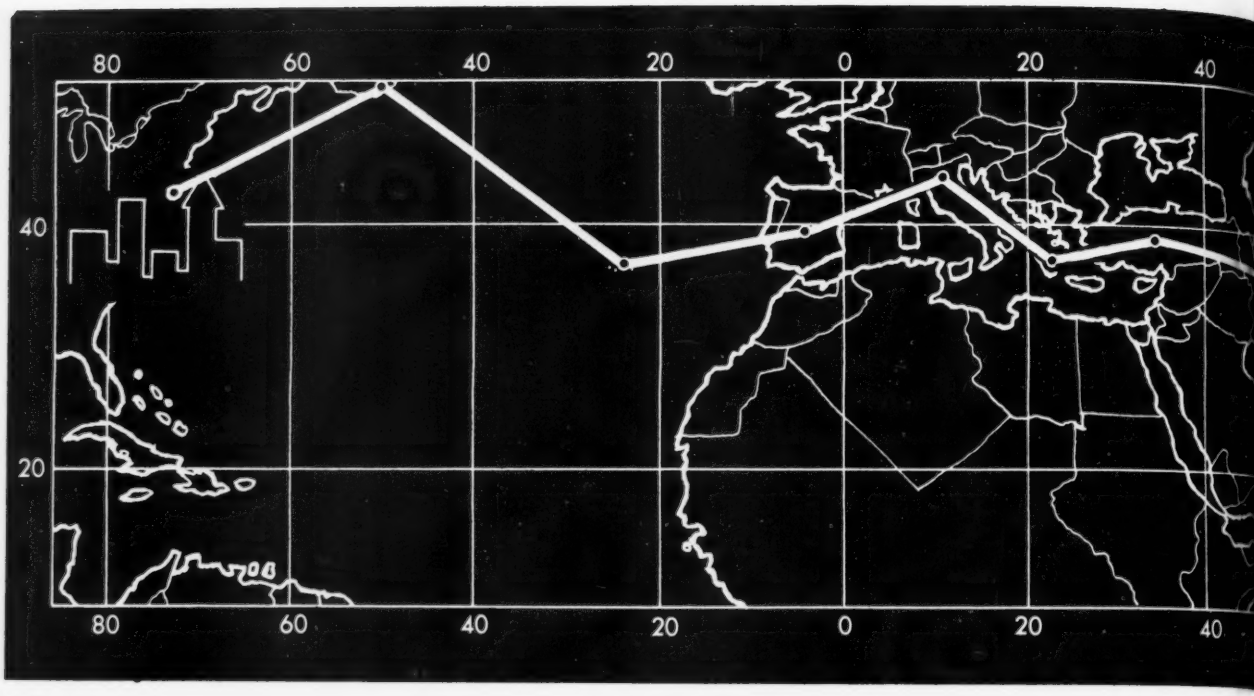
Why did I take a chance like that? Why did I ignore my responsibilities as an aviator? Why did I endanger the lives of my passengers and crew unnecessarily? Of course no excuse can be made for committing the errors I did. But how could I allow myself to get into a situation like this?

Looking back, it's hard for me to believe that I did all this. But thinking about it, I have come up with some possible answers. Having gotten away with it once, my self-pride overruled common sense. The thought that I had to maintain or even enhance what doubtful prestige I had earned caused me to ignore the possibilities of a flight in such weather. The attitude that "it always happens to the other guy" was the clincher.

By some miracle I escaped a flight evaluation board, but I will have to live with this guilt for the rest of my life. At times I break out in a cold sweat thinking about what could have happened.

No longer do I feel the need to impress others or to take chances when the urgency of the mission doesn't call for it. I am now what is known as a cautious aviator and am looking forward to being an old, but not bold, aviator. **About time, too!**

In the final analysis, the decision to go or not is yours. Are you BIG enough to make the right decision? Or will pride overrule common sense?



DESTINATION: S

Captain Ronald T. Walker

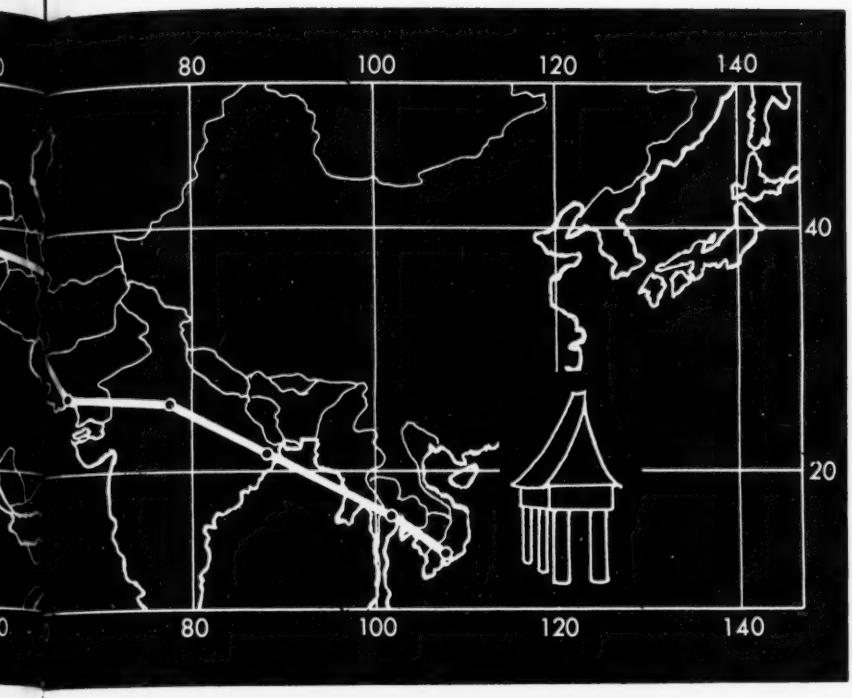
SIMULTANEOUS failure of two engines over the Atlantic will spice any flight in a U-8F. But perhaps the best way to describe delivery of a new aircraft to Saigon is, "It's a long way from St. Louis."

A U-8F was delivered on 14 November 1962 to the New Cumberland General Depot, Penn., destined for Republic of Vietnam. Lt Col Joseph W. Gude, ODCSOPNS, DA, and I were assigned the mission to fly the aircraft to Saigon. The shakedown portion of the trip began on 15 November 1962 at Davison Army Airfield, Fort Belvoir, Va., and required conduct of fuel consumption test, oxygen equipment check, familiarization and operation of the torso range extension tanks and general operational checks of all radio navigation equipment and the aircraft systems.

The shakedown jaunts took us to Cedar Rapids, Iowa; St. Louis, Mo.; Fort Hood, Texas; Fort Knox, Ky.; back to St. Louis; Washington, D. C.; Bethpage, LI, New York; and McGuire AFB. Most of the flights were primarily in the interest of aircraft maintenance and helped to assist in the shakedown requirements. All radio maintenance was performed at St. Louis. The agencies dealt with went all-out to ensure that equipment was operational and that we were zeroed-in on proper operation of the HF radio and torso range tanks.

The second stop at St. Louis was for a complete periodic inspection of the aircraft before departure overseas. Since the U-8F had two ADF sets and one omni receiver, we requested an omni indicator on the copilot's panel be connected into the pilot's omni set. Even though the deviation indicator was the only operative part, the instrument proved invaluable during periods of copilot flying by giving him a complete nav-panel to work from.

Initially the ADF, glide slope, and HF radio were inoperative, and confidence in the aircraft equipment was somewhat lack-



SAIGON

ing. However, the highly professional manner in which personnel at St. Louis quickly corrected these deficiencies went a long way to restore this somewhat daunted confidence. The 10,000-mile ferry flight was completed without incident to any of these items of equipment.

The torso range extension tanks were initially a problem. Since they are still considered a prototype, information on installation and use was limited at the point of delivery. But technicians at St. Louis came up with the needed poop and then re-installed the tanks correctly. This is most important; incorrect installation cuts down the allowable range considerably. We left St. Louis ready to go except for a stop at Bethpage, N. Y., for installation of a marker beacon and then final processing at McGuire.

The shakedown portion of the flight involved approximately 25 hours of flying time, with actual instrument approaches at Cedar Rapids, St. Louis, Fort Hood, and Fort Knox. About two-thirds of this time was logged either under actual instrument conditions or at night—or both. The transponder equipment more than proved its worth during the shakedown. But from Madrid onward, the transponder was used very little. We advised air traffic control centers that it was available, but in most cases the centers had no radar equipment capable of using IFF.

A "NO FLAP" DEPARTURE

Several years ago, when the Army initially began flying its L-23s to overseas delivery locations, Air Force personnel at McGuire conducted detailed and thorough briefings to ensure that crews were completely oriented on the Atlantic crossing. Now that such flights are commonplace, McGuire is a bit more blase. Don't misunderstand me. The more information that is made available and the more planning that is done on the ground prior to crossing the Atlantic, the better off are the aviators. [See "Crash Sense," DIGEST, April 1963.] After passing through McGuire in 1958, en route to Germany with an L-23, it actually made me feel good to be able to file out of McGuire as though it were just another operation and just another flight. What we received there this time was more than adequate, but not on such a blown-up scale.

The first leg, on 27 November, took us on the most direct airway to Torbay, Newfoundland. This took 8 hours and 5 minutes, flying at 9,000 feet with a minus wind factor and at economy cruise setting—28.8" of manifold pressure and 2500 rpm. Fuel consumption was 32 gallons per hour. About 45 percent of the leg was over water. Our total allowable flying time with 120 gallons in the torso tanks at economy cruise was 11 hours. This was more than ample fuel for any leg of the flight, and actually left us with a good 2½-hour reserve on our longest leg —1,300 miles.

At Torbay we were met by the Canadian flight operations officer and introduced by phone to the USAF air-sea rescue

crew, which was to escort us to the Azores. After giving a reasonably good forecast for the flight next day, the Canadians made us comfortable for the night. I might add here that we didn't expect an escort aircraft out of Torbay and didn't learn that we had one until after we landed there. Due to operational requirements during the Cuban crisis, the Air Force had not committed an air-sea rescue ship for us.

CROSSING THE ATLANTIC

On the morning of 28 November, we departed Torbay for the Azores. This proved to be the most interesting leg of the trip, and I might now say that we were happy that the Air Force crew was right with us. The weather forecast indicated that we would pass through a mild front, initially have a plus wind factor and, after passing ocean ship Delta, pick up a minus wind factor. The average was to be a plus 2 wind factor. As it turned out, we made the trip in 9 hours and 15 minutes and experienced a minus 4 wind factor. Upon arrival at Lajes, we had 2 hours of fuel remaining.

You will no doubt talk with other aircraft over the Atlantic during the course of your flight. We and the fellows in the escort ship spent a few minutes of sheer panic after talking with a Navy picket aircraft just before arriving over ocean station Delta. The pilot in the Navy aircraft informed us we would experience a 100-knot change in groundspeed after passing the station. Needless to say, computers were put to spinning, radio transmissions were made, and general consternation arose in two cockpits. At the time we were only 15 minutes from our point of no return and confirmation was of utmost importance. We found their information to be inaccurate and continued on our merry way.

I mentioned earlier that we were to pass through a mild front. Except for moderate mixed icing, which required us to climb out of our altitude, the front was mild as forecast. During this period we were operating off the torso tanks and I added climb power without switching the fuel selectors to main. This caused both engines to quit simultaneously. A correction was made immediately and the aircraft returned to normal operation, but those few seconds seemed an eternity. The thing that bothered us most about it was that we were in the soup with a load of ice and 60-foot waves on the ocean beneath us.

TERRA FIRMA UNDERNEATH

Our flights out of the Azores and Madrid, Spain, to Verona, Italy were uneventful and the aircraft operated perfectly. Our original routing after leaving Madrid called for stops in Marseille, France, and Naples, Italy. However, since we were due an intermediate inspection, we changed our itinerary to Verona where the aircraft maintenance element under SETAF made the inspection. Their very fine support and help was greatly appreciated and served us well all the way to Saigon.

Before continuing any further along our route, I want to talk briefly about the torso tanks. The four tanks had a capacity of 30-35 gallons each and were mounted in each passenger seat. Each tank had its own fuel pump and operated through a series of quick disconnects, which allowed us to operate any number of pumps, or all simultaneously.

One outstanding fault with this system is that the fuel is pumped directly into the engine. Recommendations have been made to change the configuration so that the fuel is pumped into the main tank. This will preclude periods of silence from the engines during transfer operations. Instruction received by the crew indicated we should always operate at least two of the four pumps at once but never one. This was found to be true while the torso tanks had a good deal of gas in them. However, to maintain a constant pressure indication, we found that operating three tank-pumps simultaneously served the system best. After all tanks were near the empty stage, all four pumps operating was the only way to maintain the required pressure until all gasoline was used.

The gross weight of the aircraft with torso tanks filled to full capacity came out around 8,500 pounds. This wasn't too bad and after an hour or so of flying brought the weight down to within limitations for safe single-engine operation. Just be sure that you get as much instruction as possible on the operation of the tanks at the time the aircraft is picked up. Our trial and error method of learning about the tanks left us somewhat edgy, since our engines quit no less than eight times during the shakedown flights and over the Atlantic.

MARCO POLO IN REVERSE

The remainder of the trip was routine and enjoyable for the most part. After departing Verona, Italy, delays or RONs were made as follows: Athens, Greece; Ankara, Turkey; Tehran, Iran; Karachi, Pakistan; New Delhi, India; Calcutta, India; Bangkok, Thailand; and Saigon.

Until we reached Athens on 5 December 1962, all diplomatic clearances had been received in a timely fashion as requested by

TMC in St. Louis, except for Iran and Pakistan. Upon arriving in Athens, we inquired at the office of the air attache to determine if they had information on the clearances we needed and if not to initiate an inquiry to the agencies concerned in Iran and Pakistan. As it turned out, we remained in Athens for 8 days awaiting this information. When it finally came through, we were informed that clearances had been granted on 4 December. We still do not know who might have been at fault in failure to transmit them either to TMC, Ankara, or Athens.

PILOTING? YESSIREE!

Navigational aids en route after departing Ankara became less and less dependable until arriving in Karachi, Pakistan. The legs flown ranged in length from 700-1,000 miles. For the most part, we depended a great deal on the winds forecasted, magnetic headings, and dead reckoning. The only leg on the entire trip flown on a VFR flight plan was between Ankara and Tehran. Here we elected to fly at the minimum en route altitude VFR. Of course the weather was good, and that is the only way we would have flown that leg. Not only were the navigation aids poor, and widely separated, but the en route altitudes under IFR conditions would have required us to completely deplete our oxygen supply. As it was, we were on oxygen for almost 3 hours. From Karachi to Saigon, the beacons and VORs available were considered good.

One piece of equipment available on this aircraft which proved its worth throughout the trip was the 618 T3 SSB, HF radio. This set allowed us to be always in communication with someone. Throughout the trip we were able to talk to Andrews AFB in Washington, D. C. Contacts were made with Andrews on the ground in Cedar Rapids, Iowa; Fort Hood, Texas; and Athens, Greece; airborne over Torbay, Newfoundland; Barcelona, Spain; the Mediterranean Sea; Tehran, Iran; and Karachi, India.

GOOD THINGS TO KNOW

In almost all cases, contact was excellent and allowed us to talk with parties in the Pentagon at almost any time. We are both exceptionally grateful to the personnel at Andrews for giving local and long distance phone patches while using the HF set.

Customs, immigration, and health record inspections were not a problem in any area except Pakistan and India. When I say not a problem, I mean there were no long and involved processes except in those two places. In Karachi we processed rather fast. They stringently inspected the immunization record for current shots. If your smallpox vaccination is not current within 90 days when arriving in Karachi, you will be given a new vaccination and quarantined for two weeks. While not common knowledge, all shots which would normally reflect batch numbers on the immunization record must show the batch number.

When you arrive or depart any port of India, be sure you have much patience, time and writing implements. You will make out about 15 general declarations in all and will be processed extremely slow.

Refueling facilities along the entire route were exceptionally good and as a rule, fast. If you are assigned a ferry mission of this nature, be sure to carry along your own engine oil. For the most part all the agencies en route, including the AF, carry high detergent oil. Refueling the torso tanks was no trouble and was done quickly. We used contract fuel at practically every stop en route. The civilian agencies were properly geared to refuel the torso tanks without having to get into the aircraft. As a result the aircraft arrived in Saigon in exceptionally clean condition inside.

We found that Jeppesen provided the best all around coverage of the flight path. Even though we had other publications and WAC charts, we relied on Jeppesen about 90 percent of the time. This was extremely helpful through the Middle East, across India, and into Saigon. An ADF approach at Ankara, Turkey was the last actual instrument approach all the way to Saigon.

In planning a similar flight, consider flying two days and resting one, especially on the long legs. We found the better rest stops are as follows: Madrid, Spain—use the Air Force facilities at Tarajon Airport; Verona, Italy or Athens, Greece; Ankara, Turkey; Tehran, Iran; New Delhi, India; and Bangkok, Thailand. Not only are the hotels modern and clean, they are reasonable in price. If you enjoy a cocktail before dinner in the evenings and no officers club is available, you should buy all the necessary ingredients as you pass through the Azores. Prices there are more than reasonable.

Perhaps this article will assist other Army Aviators who are assigned to ferry an Army aircraft over the North Atlantic through Southern Europe and the middle east to Saigon, Vietnam. Most aspects of the trip were desirable, and only minor changes would be made in the itinerary if this trip has to be made again.

Does your unit need to improve its survival proficiency? Do the Army Aviators need to increase preparedness for survival? Here's how one unit accomplished these objectives.

Prepare for Survival

Captain Endel Raidmets

ARMY AVIATORS of the 4th Aviation Company, Fort Lewis, Wash., operate in an area which has witnessed many stories of nonsurvival. Frequently search crews looking for recently lost aircraft in the Pacific Northwest find one which had been written off the books years ago. The forbidding mountainous terrain and frequent involvement in search and rescue missions provided real incentive for aviators to improve their own survival chances. After all, one day they might be on the receiving end of one of those missions.

Surrounded by vast regions of sparsely inhabited forests, mountain ranges, and even desert-like terrain, Fort Lewis, is located in one of the more beautiful areas in the country.

Bailouts or forced landings, and subsequent survival are ever-present considerations while flying in this area. To increase survival chances of its aviators, the 4th Aviation Company initiated a unit survival training program because—

- The terrain would in many cases offer a real survival challenge.
- Many aviators assigned to the unit had not had any previous survival training.
- Such a program would broaden the scope of training in the unit.

The Aviation School at Fort Rucker conducts a fine survival

Figure 1

PROPOSED CURRICULUM FOR A UNIT SURVIVAL PROGRAM (ACADEMIC)

Subjects	*Time*	*References*
First-Aid	2	FM 21-76, p 13-18
Improvised Shelters	1	AFM 64-5
Individual Survival Equipment	1	
Procurement of Food—Plants	2	FM 21-76, p 63-122, and AFM 64-5
Procurement of Food—Game	1	FM 21-76, p 122-148
Procurement of Water	1	FM 21-76, p 47-61
Food Preparation	1	FM 21-76, p 158-168
Firecraft	1	FM 21-76, p 149-157
Fire Prevention	1	

In addition such subjects as land navigation, signaling devices, and escape and evasion could be added at the discretion of the survival officer.

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course, but it cannot cover all of the finer points unique to various areas. Thus, individual aviation units must round out the training program. In many ways this approach has its advantages. Each unit can gear its program to special survival problems peculiar to the region it operates in—desert, mountain, arctic, etc.

A real need for such a program is evident. Foremost in our minds is our present involvement in Southeast Asia, where the chances of facing a demanding survival situation are always present. [See EJECTION, page 2.] Many of us tend to forget or overlook the fact that vast regions exist in our own country where a downed aircrew would face a similar situation.

Much of the success in any unit training program depends on command interest and emphasis. Objective of the 4th Aviation Company program was to improve individual survival proficiency and increase individual preparedness for survival.

An academic program was set up as a prerequisite to actual training. For the curriculum, see figure 1.

The curriculum resulted in immediate improvements in individual preparedness, not only in knowledge but also in the many different varieties of survival kits carried by most members of the aviation company.

The next step was to expose each aviator to an actual survival situation. Due to normal unit commitments the company was able to pick only two pilots a week for this training, but this in itself did not actually diminish the value of that phase of the program. In fact, it was found to be useful. Recounting each survival experience added substantially to the level of preparedness of all other unit members.

Survival trips were unannounced, and this proved to be a real incentive for all aviators to be ready at all times for an unexpected trip to the wilderness.

The training method used was to pick two aviators, schedule them for an apparently bona fide mission, let them file their flight plan, preflight, and actually enter the aircraft they thought they were going to fly. At the last moment the survival training officer would stop them. The aviators were allowed to keep all personal survival equipment and clothing they had with them. Then they were carried by helicopter to a preselected area. There they were given a last briefing as to the administrative travel limits and various do's and don'ts, issued some additional equipment (which our flight surgeon insisted that they have), and informed that they would be picked up in 2 to 5 days.

In the beginning this method caught a few people with little or no survival equipment. But this situation improved markedly after those unfortunate few returned to relate their experiences—and opinions of the selection methods employed by the survival training officer.

My own turn came one early spring morning as I was about to depart to Yakima firing center with another aviator. We were fortunate in that both of us had some survival equipment and a small amount of food—bouillon cubes, a small amount of dehydrated macaroni, instant coffee, sugar, and a couple of packs of cigarettes.

After taking inventory of our kits and rationing our supplies we started to plan for our stay. Since we were told that our "rescue" would arrive in 3 to 5 days, our most immediate concern was to build a shelter as sturdy and comfortable as possible. This took the better part of the day and we used a large amount of energy which we really could not afford to lose.

We made one big mistake right at the start: after inventorying our food, we decided not to eat until evening. But one thing we had not counted on: once you get really hungry—and believe me nothing beats working hard in nice fresh air to create an appetite—a meager food ration does not improve the situation.

After our fire had been burning awhile, we discovered another mistake: we had not provided for any airflow from the lower part of our shelter and the hut had filled with smoke.

The choice was to either endure the smoke or get cold, since our clothing was not quite adequate to keep us warm. . . . The smoke was not too bad when lying down.

We took turns watching the fire and sleeping—except when we had to go find some more firewood. Yes, we ran out about 0300 in the morning. In addition to being wonderful training in developing our night vision, this provided us with an opportunity to clear the smoke from our eyes.

At daybreak we improved our shelter and gathered a supply of firewood to last through the night. We also made some attempts to fish and looked for some plantlife and game, but we were not successful at catching any wildlife. I almost lost my hunting knife when I threw it at a squirrel. That would have been quite tragic, since we both felt that our heavy knives were the best part of our equipment.

We did catch up on some needed sleep during the warm afternoon. By then we had learned the value of conserving our remaining energy.

The second night proved quite uneventful, and we were both quite happy with the improvements made in our little home. We spent the third day in getting more wood, fishing, and just plain resting.

We were lucky that the survival officer decided to "rescue" us that evening, and we both said goodbye to bouillon cubes forever.

Since this was a noncombat situation, we were required to take certain safety precautions. Two men at a time were sent to the survival area. Also, a telephone line was run to the area so that help could be called in an actual emergency. The "survivors" were restricted to within 30 minutes walking distance of the exercise area.

At the insistence of our flight surgeon, each survival team was issued a first-aid kit, water purification tablets, and a number 10 can for boiling water or cooking. Also issued were six panels of a surplus cargo or drone parachute.

An undertaking of this type also involved thorough preplanning and coordination with a number of agencies. (See fig 2.)

State officials are very cooperative and will lend all possible assistance for such a survival program. For example, a member of the Washington state forestry service gave personnel of the 4th Aviation Company briefings on edible and poisonous plantlife.

A unit training program for survival has been stressed, but each aviator has individual responsibilities. After all, it is the individual who has the biggest stake in survival.

What are some of the things that can and must be done to prepare?

- First, physical fitness is important, not only for our daily well-being but particularly in a survival situation where stamina is tested to the limits.
- Study the area you normally fly over and become familiar with prominent terrain features, plantlife, wildlife, etc.
- Prepare an individual survival kit, to include first-aid supplies, easily storable food, water purification tablets, a sturdy knife, a signal mirror, etc. All of these items are fairly inexpensive and readily available, except the signaling mirror. Do not overlook standard items of equipment which can prove invaluable in a survival situation. Rotary wing aviators can certainly expect to have a first-aid kit in the aircraft, as well as a magnetic compass and other detachable items. Fixed wing aviators have the same items and their parachutes, from which many useful things can be made.
- Last but not least, an aviator owes it to himself and his family to have his personal affairs in good order. A good mental outlook and the will to make it are essential ingredients in the successful survival story.

Figure 2

The following should be accomplished before scheduling actual survival training.

1. Select a suitable area.
   a. As isolated as possible
   b. Near some water
   c. Where some game is known to exist
   d. Where shelter and fire-building materials are available
2. Coordinate the use of the area with appropriate authorities.
3. Secure permission to procure game and fish, regardless of season.
4. Coordinate with the flight surgeon and seek his recommendations.
5. Establish some means of communication with the selected areas.
6. Procure some salvage parachutes (the issue of at least 6-8 panels of a chute to each survivor will add realism to training).

The above is a recommendation for the minimum amount of coordination that should be made and can, of course, be varied depending on circumstances.

SURVIVAL KIT

à la huachuca

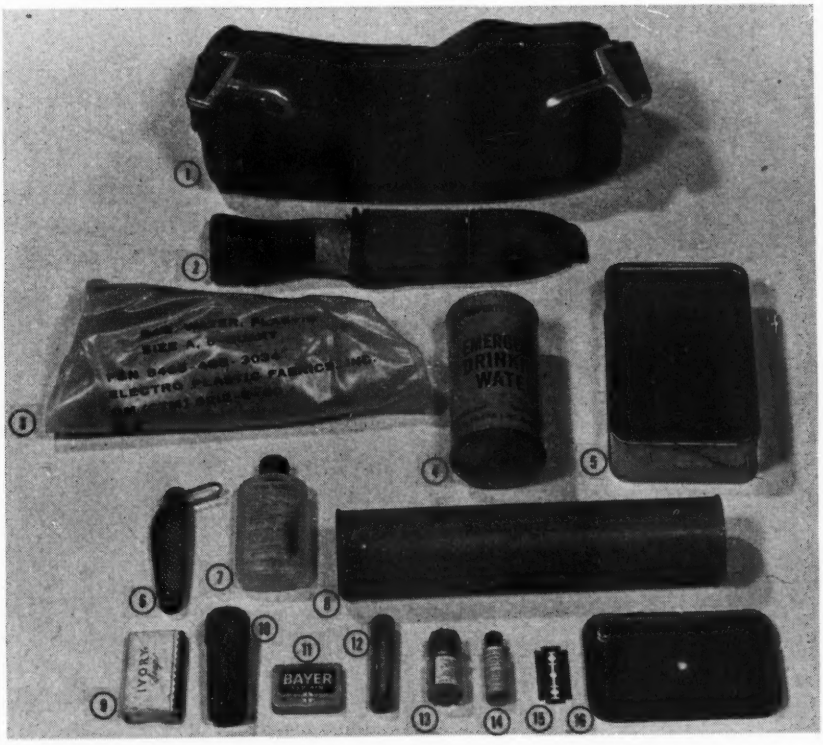
PICTURED HERE is a survival kit assembled and used by Army Aviators, Libby Army Airfield, Fort Huachuca, Ariz. Also shown is the PSK-2 personal survival kit which has now been type classified by the Army and is available through normal supply channels.

The contents of the kit improvised at Fort Huachuca can easily be changed, depending on circumstances. For example, when a smaller flare becomes available, an extra can of water might be added. Or, if the sur-

The basic survival kit assembled at Fort Huachuca.

1. *Container*
2. *Hunting knife*
3. *Waterproof bag*
4. *Drinking water*
5. *Food*
6. *Pocket knife*
7. *Insect repellent*
8. *Parachute flare*
9. *Soap*
10. *Waterproof match box*
11. *Aspirin*
12. *Sunburn protective*
13. *Water purification tablets*
14. *Salt tablets*
15. *Razor blade*
16. *Mirror*

Other items can easily be added as desired.



Above:
The kit can be attached to the leg strap D rings. Although this kit has not been tested in an actual jump in this position, no adverse effects due to a straight downward pull against the front thigh muscles should occur during opening shock.

vival food packet is not available, the standard assault ration is easily adaptable. A good number of small essential or luxury items can be fitted into the case.

At Fort Huachuca the kits are stenciled with a control number, sealed to ensure that they remain complete, and issued to aviators on a hand receipt basis as they depart on flights. Although all of the items are expendable, time and effort necessary to replace them is too great

The kit is easily attached to the rear parachute harness D rings

to risk uncontrolled issue. The container was locally manufactured at an Air Force base. Made of heavy canvas and lined with ¼″ felt, it is secured by a heavy duty zipper and fastens to the chute with parachute harness snap rings.

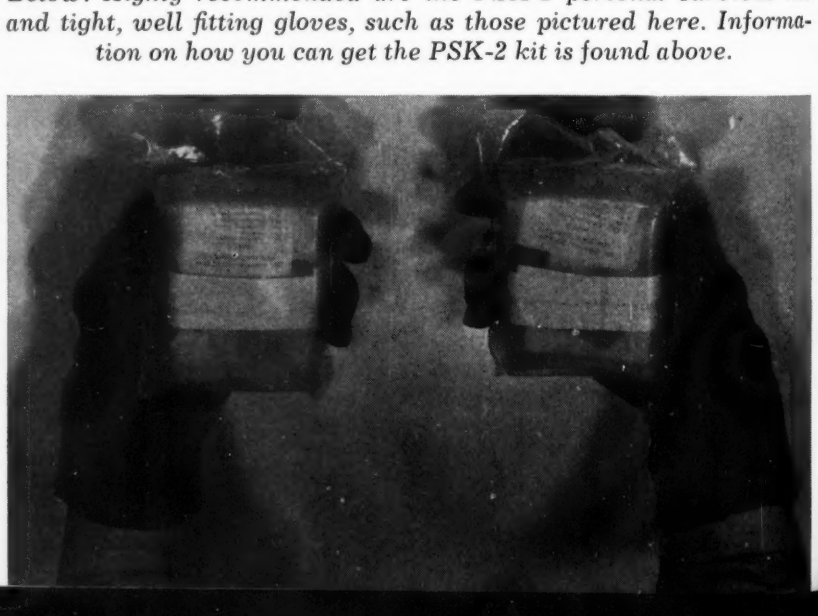
Full aft stick displacement in the 0-1 is possible with the kit attached to the leg strap D rings and held in the lap. The same full control movement is possible in the U-1A and U-6A.

• Four survival kits have been type classified by the Army and may be requisitioned by Army Aviation units through standard procedures, according to information received by the DIGEST from the information office of the U. S. Army Aviation and Surface Materiel Command.

1. The hot climate kit, FSN 8465-973-1861
2. The cold climate kit, FSN 8465-973-1862
3. The overwater kit, FSN 8465-973-1863
4. The PSK-2 individual kit, FSN 6545-611-0978

Requisitions for the first three kits should be sent to the Defense Clothing and Textile Supply Center (DCTSC), Philadelphia, Pa. Units interested in the PSK-2 kit should forward requisitions to the Defense Medical Supply Center (DMSC), Brooklyn, N. Y.

Below: Highly recommended are the PSK-2 personal survival kit and tight, well fitting gloves, such as those pictured here. Information on how you can get the PSK-2 kit is found above.



Reprinted from FLYING SAFETY Officers' Special Study Kit.

Overcoming apprehensions about flying in the soup is primarily a personal problem, but confidence can be generated by training and experience. Here are a pilot's ideas on the subject.

You Can't Raise the Hood

OVER THE years, and especially since World War II when private and business flying grew with leaps and bounds, numerous articles have been written in regard to instrument flying.

For example, I graduated from the blind flying hoods of the BT-13 and AT-6 into the cockpit of the P-47 Thunderbolt. To say I was "shook" is an understatement. I give myself credit for being of average intelligence and possess the average smattering of "guts," but when I found myself flying the "Jug" in the soup, all by myself, the realization suddenly came to me that I couldn't raise the hood. This realization has stuck with me throughout my instrument flying: you can't raise the hood.

The average pilot upon finding himself on the gauges by himself for the first time is generally confronted with similar apprehensions.

The finest instrument instruction in the world does not instill in the instrument pilot the confidence necessary to properly fly by reference to instruments alone. True, this instruction is a must to teach correct fundamentals, instrument interpretation, techniques and procedures.

The question that now confronts us is how to instill this necessary confidence in the pilot to dispel the fear of the unknown. A pilot with an instrument ticket who has never actually been in the soup except for an occasional fair weather cumulus is not an instrument pilot. He has not been confronted with the fear of the unknown. He will undoubtedly attempt to fly VFR when conditions are actually IFR. By doing this he is creating a hazard for himself and other aircraft in the vicinity. His instrument ticket is to show the boys at the airport bar. It has been noticed by this writer that individual weather minimums really go down around the bar. The danger in this is a pilot may start believing it himself. Above statements are meant to convey that sole possession of an instrument rating does not necessarily mean the pilot has the proficiency or possesses sufficient confidence in his own ability.

Speaking from my own experience with instrument flight, I found the actual instrument interpretation, manipulation of controls, radios, etc., rather simple compared to overcoming the psychological effect of not being able to raise the hood, and orientate myself by reference to the ground. What caused this feeling? Was it insufficient training? I had received many hours of link training and flight under the hood. Did I lack intestinal fortitude? I must admit at the time I wondered, but now realize it was something that went deeper. Was it lack of proficiency? (A word all pilots would do well to understand and remember.) Surely not, as I had demonstrated my proficiency to the instrument flight examiner and was issued an instrument "ticket."

What was it then?

This last question has an-

swered itself over my eighteen years and ten thousand hours of flying. It was a matter of self-preservation coupled with habits formed under the hood that forced me to keep the "Jug" right side up at first. I did not possess the confidence in myself necessary to be at ease and properly fly instruments.

Since those first times in the soup I have flown and instructed many hours of instruments, both military and civilian. The conclusion I have reached may not be in agreement with all the material presented before, but at least it may assist someone possessed of the same psychological apprehensions as I.

As previously stated the fundamentals of instrument flying, link, and hood time are necessary as a basis to start on. I call this the mechanics of instrument flying. The next thing is to instill confidence in the instrument pilot to bolster his proficiency. How can we accomplish this? Night flying VFR is the answer to the first step. Night flying presents smooth flying as a general rule, and fewer aircraft are in the air at night except around large terminals. Usually aircraft are easier to spot at night due to the navigation lights. The first flights should be dual of course but after a few flights, extensive night local flights and cross-country flights are recommended for the pilot. While flying at night the student will find himself unconsciously referring to his instruments when the horizon fades momentarily and in areas of reduced visibility. He will put in practice radio navigation that he has been taught along with the pilotage he is more familiar with. The conscientious student will practice airways flying and procedures at this time also. After several hours of night flying he has developed a great deal of confidence in his plane, its instruments, its radios, and himself.

The next step is to actually fly in the soup. The first flights should be with a proficient instrument pilot and properly equipped aircraft. He should only observe at first. This flight should be made in a stratus deck to take advantage of the smooth air while becoming accustomed to flight by reference to instruments. He will be interested in observing the procedures of the pilot, the instrument indications, and his own reactions. He will probably be surprised to find the pilot is not as busy as he suspected he would be. With a properly trimmed aircraft the pilot, except on takeoff and landing, has but to monitor the instruments and make position reports. Keep at ease! It is possible he might experience his first "vertigo" if he did not encounter this during his night flying. He will find his senses are misleading and that it is necessary to refer to the instruments for control of the aircraft. After a short while he will undoubtedly desire to take the controls. As his desire becomes more pronounced it is obvious the psychological fear of the unknown becomes less and less. At this point it is well to be cognizant of the danger of overconfidence without due respect to the weather. A few flights in cumulus clouds will assist in keeping overconfidence to a minimum.

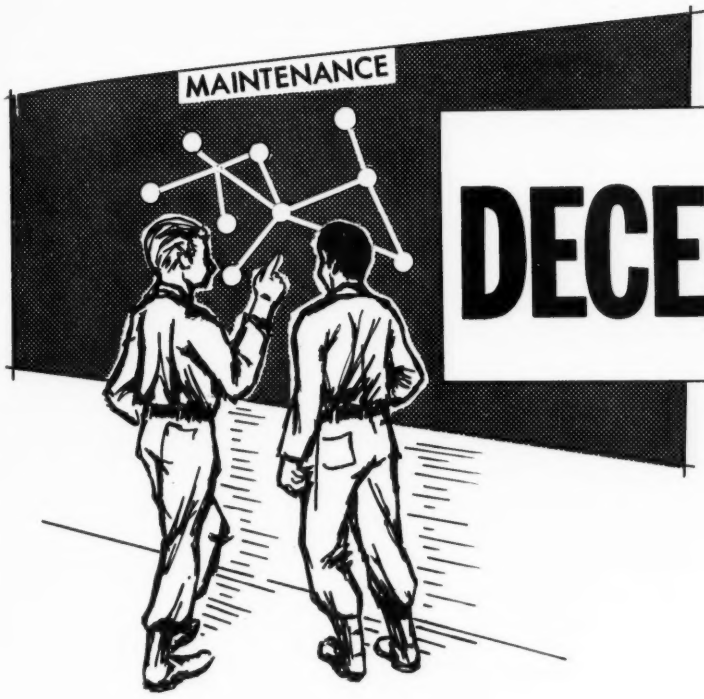
The new instrument pilot should be thoroughly briefed on such hazards as structural ice, carburetor ice, hail, thunderstorms, etc., and what to do should they be encountered in flight. He should be briefed on lightning and how to lessen its effects by adequate cockpit lighting. Fog does not present a hazard except on takeoffs and landings. However, the student should thoroughly understand fog and its formation to preclude embarrassment upon arrival at destination and finding it socked in.

To some instrument pilots this article may seem a bit elementary. So it is. But if each pilot will look back to his first "in the soup" flight it may be easier to realize the apprehensions that confront the new inexperienced instrument pilot. Many new pilots, civilian and military, cannot ride copilot with an experienced pilot in the left seat, a most excellent way of building confidence, learning procedures, and experiencing a few of the natural hazards and learning how to safely cope with them.

I have personally had pilots possessing instrument ratings fly with me who had never been in the soup except maybe on an airliner. It is interesting to observe their reactions. In case of pilots with considerable pilot time VFR, after only a short time they seem to relax and enjoy it. Any apprehensions they may have possessed have vanished. They realize they don't need to "raise the hood," as the plane, the instruments and pilot are thoroughly reliable.

In the present air age and looking into air travel of the future, instrument flying will, out of necessity, take on new proportions. If we as pilots are going to maintain the present safety record with the increase in the amount of flying, it is our duty as individuals to keep proficient, know our own limitations and stick to them. Remember—it's better to be on the ground wishing you were in the air, than be in the air wishing you were on the ground.

KEEP PROFICIENT!



DECENTRALIZE

Lieutenant Colonel Edward B. Blackman

MOST ARTICLES on maintenance are like Sophia Loren in a Mother Hubbard dress, a few good points are revealed here and there, but an awful lot of interesting territory is out of sight.

Recently I was able to do a bit of catch-up reading in the DIGEST and noted several articles on the subject. They contained all of the precepts taught for efficient organization for maintenance, including functional and centralized control of 1st and 2d echelon maintenance by qualified maintenance officers.

After thinking these items over, I couldn't help wondering if they are necessarily true or always desirable. I am not convinced that we can always gain the maximum overall benefit from a centralized organization maintenance.

A number of years ago, I commanded the 2d Aviation Company, 2d Infantry Division. During that time I was a proponent of decentralized organizational maintenance and operations for a number of reasons. I do not now, nor did I at that time, believe that decentralized maintenance would provide either more efficient use of manpower or higher availability of aircraft. On the contrary, I accepted the fact that it would be less efficient in these areas in order to gain the advantages that would accrue by decentralizing maintenance to the lowest possible level.

During my association with the Army Aviation program, I have noticed an increasing tendency for maintenance to become a one-man job, regardless of the TOE structure or the tactical employment under field conditions. Early in the history of Army Aviation, it was common for every pilot to be his own maintenance officer. This could be done due to the simplicity of the equipment. Between specialization of the Officer Corps on the one hand and the increasing complexity of the equip-

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ment on the other, the present trend toward the one-man job seems to be inevitable.

Peacetime conditions also tend to push centralization. During the normal day-to-day garrison operation, the unit is usually centrally based. During field maneuvers, the operation is often of limited duration, and thus any deficiencies due to the organization of maintenance functions do not present significant operational limitations.

Under these conditions, and yielding to the frequent prodding of some of the tech services types, it is all too easy for the commander to disregard some important factors and to centralize maintenance under one officer; place the most professionally qualified officer available in that slot; and reap the benefits of the efficient utilization of manpower, improved aircraft availability, and all of the kudos that accrue when you are high man on someone's statistical chart. Unfortunately, the disadvantages of this system do not appear on charts and so cannot be taken into consideration.

At the time that I assumed command of the 2d Aviation Company, 2d Infantry Division, maintenance was centralized. All unit mechanics were under the supervision of the platoon leader, support platoon, who was also responsible for all of the first and second echelon maintenance on all unit aircraft. Motor maintenance was similarly pooled. After I had had time to study the situation, I decentralized organizational maintenance to the maximum extent possible.

To decentralize properly, it is necessary to study the TOE, the mission of the unit, the equipment and personnel provided, and the probable tactical deployment of the aviation unit under field conditions in combat. I determined that I would normally be deployed with a main division airfield from which my general support elements would normally operate—a forward airfield, from which most of the direct support elements would operate (predominately the artillery support flight), and at least one heliport per battle group, from which the combat support flights would operate. In addition, to meet the particular requirements of second echelon maintenance for relative positional stability and access to third echelon capabilities, I determined that, if possible, this complex should constitute another airfield. It should be located deep to the rear during defensive operations, relatively forward during offensive operations, and have the probability of staying for a reasonable period of time in the same location during any rapidly moving situation. This would tend to reduce to a minimum the time that the service platoon would be out of action due to displacements.

I assigned personnel according to the TOE and had all equipment issued, including aircraft and vehicles, to the tactical element leaders. Each tactical platoon and section became responsible for the first and second echelon maintenance of all of its TOE equipment, not just the aircraft. The leaders were responsible for maintenance scheduling, supervision and guidance of assigned personnel, and for all aspects of day-to-day operations.

To be sure, this decentralization did not meet with complete favor from the maintenance officer, the pilots, or the NCOs and men. A considerable period of slippage, recriminations, and dust-ups passed before the company finally settled down and started to operate normally. Then I began stage two of my plan.

I started a policy of deliberate rotation of the key unit jobs among my senior officers, normally rotating them every 3 to 4 months. My executive (paperwork), operations, maintenance, and supply officers, and the tactical element leaders were rotated from one job to another. Obviously, a certain amount of turbulence was inevitable, but I relied on the key NCOs to reduce its effect to the minimum on the troops.

During this time, tactical dispatching procedures were established. The operations officer assigned missions to the platoon leader, who, in turn, assigned it to elements within his platoon. Responsibility for scheduling of pilots and aircraft devolved to the lowest possible level.

Elements of the 2d Division scheduled training and administrative requirements through the aviation element normally in their direct support. These requirements were scheduled by the platoon and section leaders concerned, with information flowing back to the company operations officer for coordination. Thus, operations as well as maintenance was decentralized to the lowest possible common denominator. Company training was coordinated by the training officer through the operations officer, but it was conducted by the platoon or section leader as appropriate.

The whole object of this approach was to make the company operate and perform in garrison in as close to a tactical posture as possible. By maintaining the relative autonomy of each tactical element of the company, I was able to estimate its

capability to conduct operations under extended distances for a long period of time. Yet, I retained the capability to provide close supervision over the whole operation.

The results were essentially as expected. Aircraft availability did fall off to a limited extent, primarily due to less efficient use of the mechanics. Second echelon maintenance was periodically feast or famine, and sometimes snowed completely under, because the maintenance officer could not exercise detailed scheduling control over the available aircraft and could not shift personnel to meet varying requirements for line and shop maintenance.

Line maintenance for aircraft had its ups and downs also, as competing requirements developed for motor stables and care of other TOE equipment which required mechanics to be diverted from their primary jobs of maintaining aircraft. However, I expect that similar conditions would prevail if deployed under combat conditions.

I also received the benefits expected. And these are the things that do not show on a statistical chart. They are, however, ever-present responsibilities of a commander charged with the training of a unit.

LEADERSHIP. Placing the burden of day-to-day operations throughout the structure of the company provided an excellent opportunity for the junior officers to develop leadership. They came to know the intimate problems of leading a small group of personnel. This opportunity comes rather rarely to the relatively junior stick-jockey in a large aviation organization.

PROFESSIONAL KNOWLEDGE. By dealing in microcosm with all of the problems encountered by the parent unit, including maintenance, supply, and administration, the junior officers were better prepared to accomplish their assigned missions during combat, or to assume more responsible positions at a later time. Their growth potential was enhanced to a significant extent.

COMPANY COMBAT EFFICIENCY. Although it is obvious that maintenance under this system would not necessarily be comparable to that expected under a centralized maintenance organization, it more nearly meets both the operating conditions and the operating efficiency that would be applicable under combat conditions during extended distance field deployments. Thus it more nearly approximates true combat capabilities, and provides an approximation of combat limitations for sustained operations.

In addition, by habitually using a tactical organization rather than a functional organization in garrison, the unit is better able to take to the field on short notice, without having to go through all of the growing pains associated with this changeover at a time requiring the maximum combat performance.

SATISFACTION. Probably the most important and the least tangible reward I received from decentralized operations was in watching my junior officers develop their potentials as they met successive challenges in their various job assignments. An experienced officer seldom makes mistakes, but an officer gains experience by making mistakes. It is much cheaper for these mistakes to be made in a peacetime environment rather than one of combat.

Not all Army Aviation units require or would even benefit from decentralization. Nor would I recommend that all establish decentralized procedures. However, I do feel that some Army Aviation organizations will always be required to habitually operate from decentralized locations under combat conditions. These units can benefit from decentralizing maintenance and operations during peacetime. If any element of an aviation unit will, under combat conditions, habitually occupy and operate from decentralized locations, then it should be trained in garrison as an autonomous element, and all applicable functions decentralized to it. In this way, it can better fulfill its obligations to be "Above the Best" when the payoff is for real.

Leadership, professional knowledge, company combat efficiency, and satisfaction were benefits of decentralization

A Personal Su

While it is true that Army Aviation units can now requisition survival kits through regular channels (see page 18), it is not known how long it will take for each unit to receive their kits. It behooves everyone concerned to be prepared for an emergency at all times—perhaps on your next flight. Will you be ready with a survival kit handy?

DO YOU have a personal survival kit? If not, you're one of many Army Aviators who has never really considered the important personal need of having necessary items for survival on every flight. The reasons are many—

They're on a category II or III assignment and flying is confined to combat readiness requirements.

Most of their flights are over well populated or familiar terrain.

They rationalize, *It can't happen to me.*

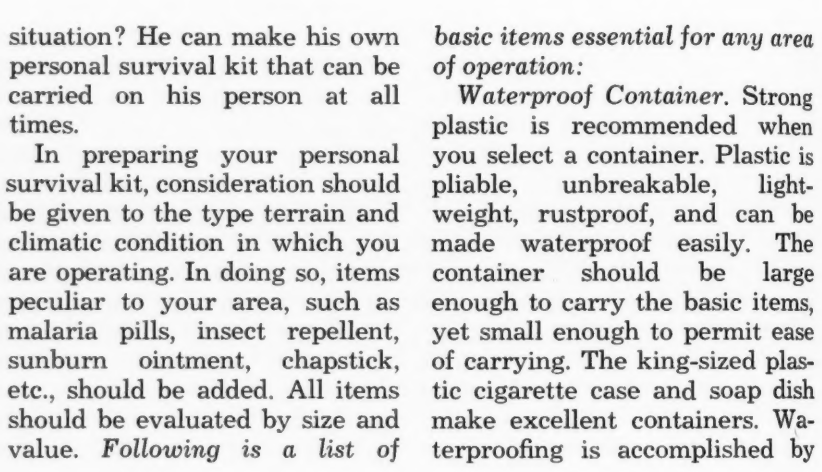
However, neither these reasons nor others will keep an aircraft airborne in an emergency, dictate where a forced landing will occur, or help keep you alive under survival conditions.

AR 95-1, paragraph 28d, states that all aircraft flying over water, desert, tropical, or arctic areas will carry a survival kit. Many types of survival kits have been devised or scrounged to comply with AR 95-1. However, let's consider the individual aviator without regard to the type aircraft he flies or the type of terrain over which he flies. What can he do to prepare himself for the day when he may be faced with a survival situation? He can make his own personal survival kit that can be carried on his person at all times.

In preparing your personal survival kit, consideration should be given to the type terrain and climatic condition in which you are operating. In doing so, items peculiar to your area, such as malaria pills, insect repellent, sunburn ointment, chapstick, etc., should be added. All items should be evaluated by size and value. *Following is a list of basic items essential for any area of operation:*

Waterproof Container. Strong plastic is recommended when you select a container. Plastic is pliable, unbreakable, lightweight, rustproof, and can be made waterproof easily. The container should be large enough to carry the basic items, yet small enough to permit ease of carrying. The king-sized plastic cigarette case and soap dish make excellent containers. Waterproofing is accomplished by

Strong plastic container can be made waterproof



Survival Kit

Captain Ernest A. Smart

securing the two halves with adhesive, electrical, friction, or similar type tape.

Matches are a critical item in a survival situation. They provide fire for warmth, cooking, signaling, light, drying, etc. Although the matches are stored in a waterproof container, they should also be individually waterproofed. Book matches or safety matches may be used. Cut book matches in half, and cover with a plastic. This makes them waterproof, easy to pack in the container, and eliminates the possibility of an entire book of matches getting wet if you carry them in your pocket. Safety matches can be covered with paraffin or ordinary wax to make them waterproof.

Pain Pills. Such pills as APC will reduce the pain in case of injury, and help overcome the mental shock which occurs after bailout or crash landing. These pills should be placed in a nonbreakable container, such as that of a styptic pencil. Other type pills to calm nerves, reduce fever, or prevent disease may be added.

Compass. It is anticipated that aviators normally will not be carrying a compass with

Capt Smart is assigned to the Instruction Division, Special Subjects Branch, Department of Tactics, USAAVNS.

them. Therefore, a small inexpensive compass is of great value.

Signal Mirror. The signal mirror is one of the most effective signaling devices. A small, thin piece of shiny tin or stainless steel, with a hole cut in one end for sighting, can be used for a signal mirror. The GI shaving kit mirror, cut down to the size of your container is excellent for this.

Water Purification Tablets. To prevent the possibility of disease, purify all drinking water. Water purification tablets may be left in the bottle or placed in a more suitable container to reduce space.

Water Container. It is unlikely that aviators will be carrying a canteen in the event of bailout or crash landing. Therefore, it is essential that he have a water container. A strong, leakproof plastic container, approximately quart-size, is recommended. The plastic litter bag used in automobiles is an excellent container. Rubber prophylactics may be used as water containers. When using prophylactics, make an outside protective container from your parachute, aircraft seat covering, tee shirt, etc. Seal off the open end to prevent spilling and contamination.

Tinfoil. A large piece of heavy duty tinfoil will serve as a cooking utensil. It can also be used as a drinking vessel, heat insulator, food wrapper, and for many other uses.

Razor Blades. Single-edged razor blades can be used as a supplement for a knife.

Fishhooks and Line. These provide an excellent means of procuring food. If you are an ardent fisherman, you may want to add a few of your favorite flys.

Sewing Kit. Regardless of the area, clothing is important. It is equally important to keep this clothing on you. A few safety pins, some strong nylon thread, and a few needles mounted on thin cardboard will serve as your sewing kit. It also serves as a means for sewing up deep wounds.

Hacksaw Blade. A section of hacksaw blade is valuable in a survival situation. It takes up hardly any space, and makes dismantling possible for many portions of the aircraft that can be used. It can also be used as a supplement to the knife. Break off a piece of the hacksaw blade the length of the container. In a survival situation, a handle can be carved from a piece of wood and secured to the blade with a wooden peg.

Candles. The small birthday type candles take up very little space, and primarily assist in starting fires. When damp or hard to start tinder is encountered, light a candle and use it.

Band Aids. It is recommended that four or five band aids be placed in the kit to protect small cuts or abrasions.

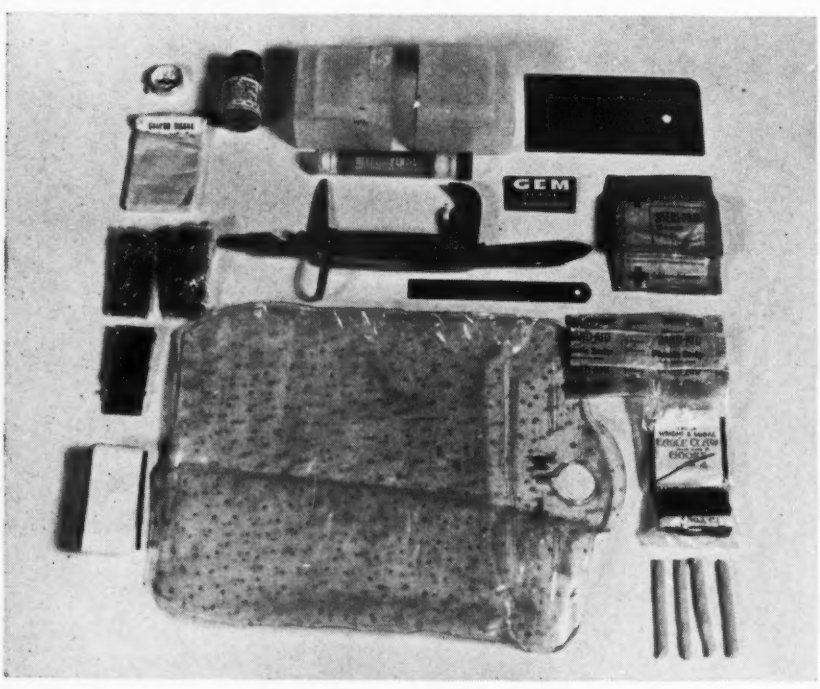
Sterile Gauze Pads (2″ x 2″). These pads are used for large cuts or abrasions. The tape used for sealing the kit can be used for securing the pad, or additional tape can be placed in the kit. (Note: For this reason, adhesive tape is recommended for sealing the containers.)

Knife. The value of a knife cannot be overemphasized. A strong, dependable jackknife should be included in the kit, if your type of flying does not permit you to carry a sheath knife. The Army does not have an acceptable survival knife that can be carried externally.

Two containers may be used instead of one. When using two, many additional items can be added and some duplicated. Following are some of the recommended items to go in the second container:

Duplicated Items. Matches, candles, band aids, sterile pads.

Basic survival kit would be valuable in any operational area



Snare Wire. Snare wire will serve as a means for procuring food. Approximately 10 feet of small gauge, pliable wire will suffice.

Soap. Use a small bar of soap or soap pads. Personal hygiene, to include the cleaning of cuts and abrasions, cannot be overemphasized in a survival situation.

Mercurochrome. A small bottle (2cc) takes up little space and helps prevent infection.

Food. Food is not an essential item; however, if space permits, food items such as sweet chocolate ration bars or bouillon cubes provide energy and nourishment.

Other. Items peculiar to your area of operation, such as malaria pills, insect repellent, etc., may be added.

Case studies have revealed that the person who has prepared himself in advance and has the basic items to work with will normally survive. I think it is appropriate to quote the motto of the Boy Scouts of America: "Be Prepared." Think about it!

A sheath knife should have the following characteristics:

Constructed of strong heavy steel.

Have a nonbreakable handle (rawhide preferable).

Have a hand guard between handle and blade.

Be between 4½" and 6" long.

Cutting edge on one side only.

The sheath should have the following characteristics:

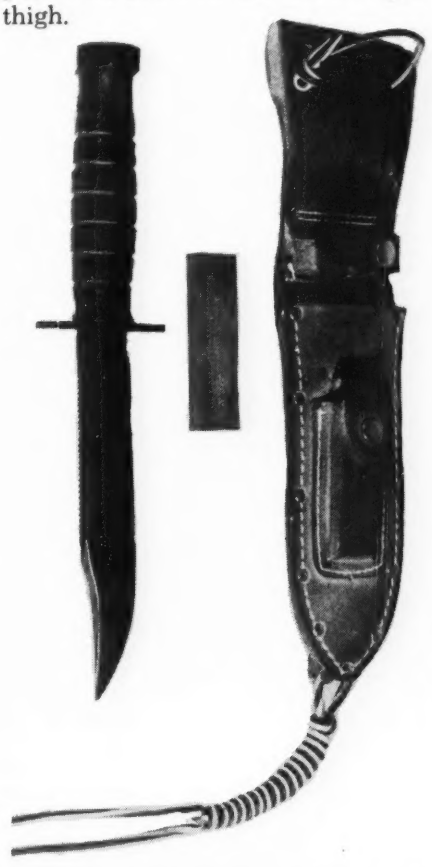
Made of good quality leather.

The belt loop large enough to allow carrying on all types of belts.

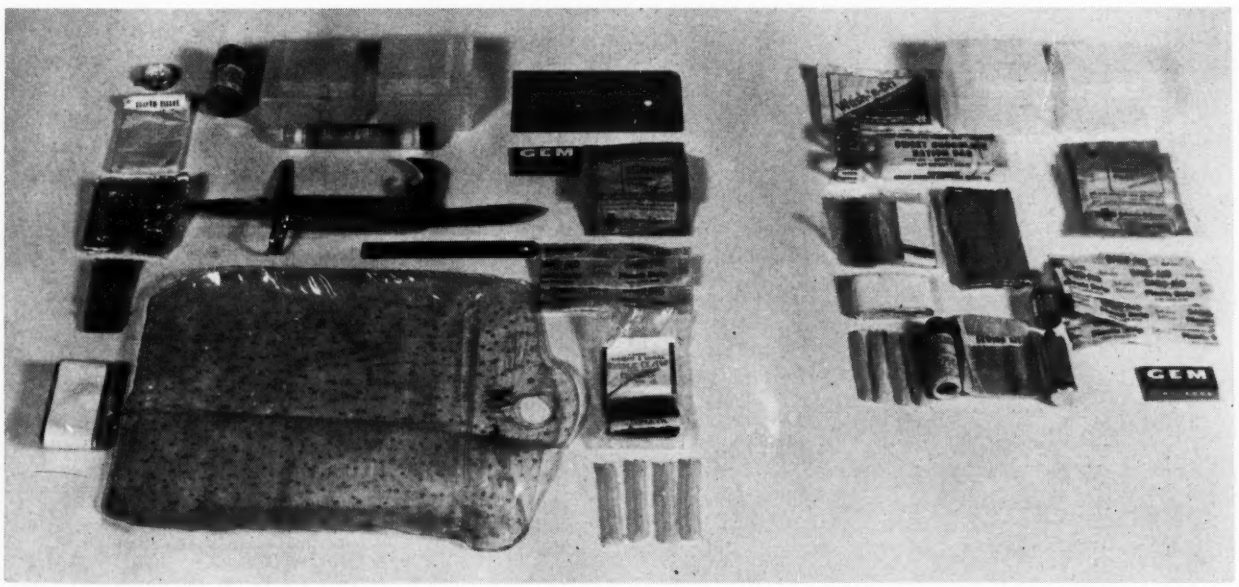
Holes at the bottom so it can be tied to the leg when carried on the hip (in case of bailout).

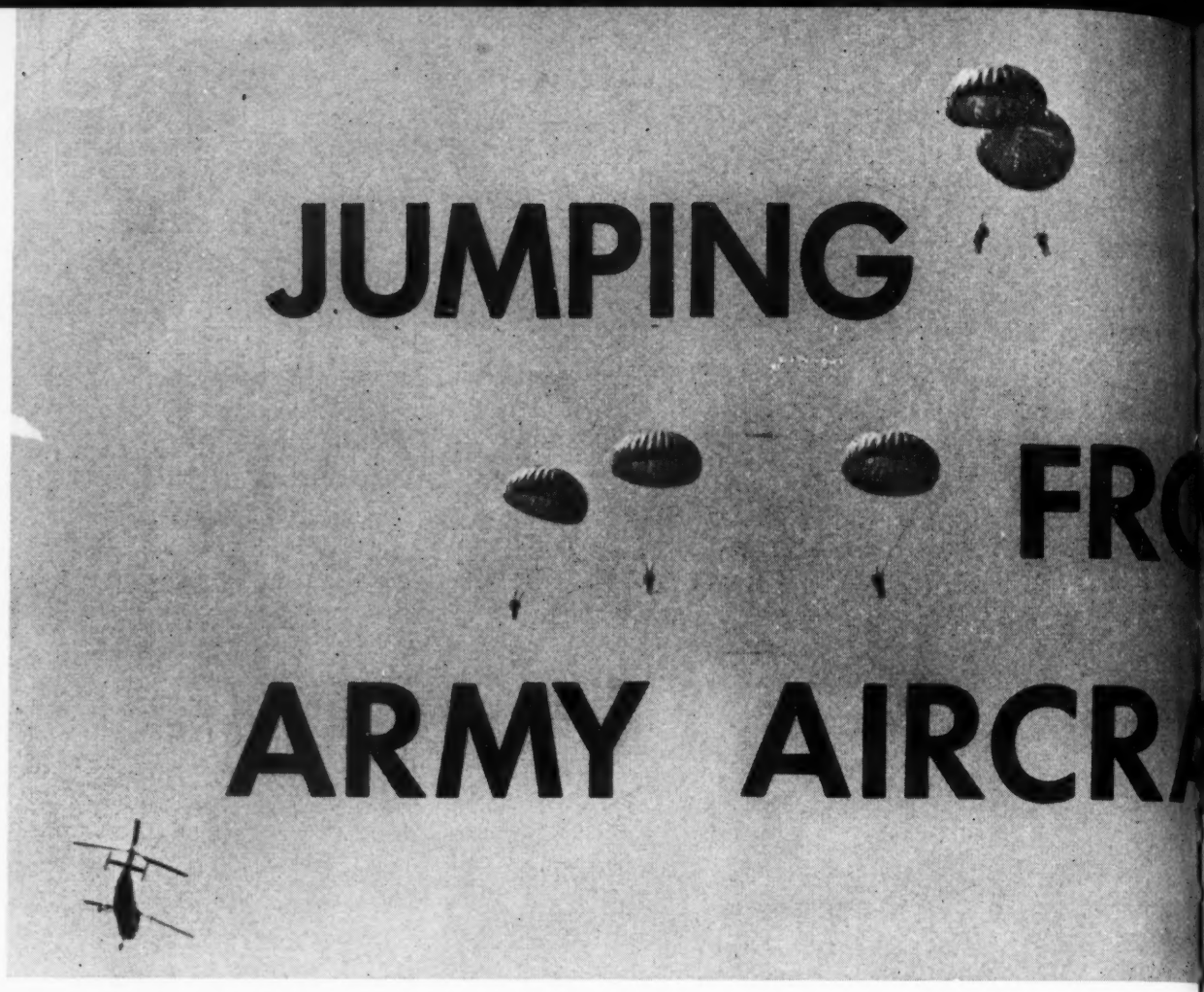
Space provided for a sharpening stone.

This knife will be your hammer, axe, machete, and maybe your only weapon. The knife illustrated is a Navy-Marine survival knife. To carry this type of knife with your flight suit, it is recommended that a canvas type pocket be sewn on the left or right thigh.



Basic kit augmented by items (right)





Lieutenant Dennis J. Morrissey

FIVE OR SIX years ago, some foresighted officers and men of the Army began to seriously consider using Army Aviation in troop parachute operations. This capability is of great value in many situations on the modern battlefield. Today, Army Aviation plays a major role in putting small units in or near their objectives.

Special doctrines and techniques have been developed, but for the most part, the procedures are the same as used in Air Force type aircraft. However, differences do exist, and one is in the duties of the jumpmaster. His job becomes very complex when using light aircraft. For all intents and purposes, he is the troop commander during the jump and in the following ground mission.

When the unit arrives at the aircraft, the jumpmaster ensures that the aircraft is prepared for jumping. He installs the anchor line, checks communication equipment and safety straps, and tapes up door edges and sharp projections. When necessary he even removes the jump doors and seats.

Before the flight the jumpmaster briefs the pilot on the location of the drop zone and what type approach pattern he wants to fly. He advises the pilot of the desired altitude and drop speed. The pilot will tell the jumpmaster what ground and altitude winds are expected in the drop area so the jumpmaster can determine where his air release point will be.

During flight the jumpmaster is responsible for seeing that all safety precautions are closely observed. Since the troops are normally near an open door, great care must be exercised so that no one accidentally activates his reserve parachute or prematurely falls from the aircraft. In leaving the aircraft, all jumpers must be careful not to become

tangled in another jumper's static line or that his own static line does not become routed under his arm.

As the aircraft approaches the drop zone, the jumpmaster gives the pilot necessary last minute corrections on his approach path. On all aircraft other than the Caribou, the jumpmaster must determine where the first man will exit. The Caribou has red and green jump lights so the pilot gives the command.

In jumping from a slow moving Army aircraft, the opening shock of the parachute is normally less than from a faster Air Force plane. But while reduced shock pleases the trooper, this type of jump demands more alertness. The 4 seconds usually required for the chute to open when parachuting from an Air Force plane at speeds of 100 to 130 knots is increased to 5 or 6 seconds when parachuting from the slower Army aircraft. The jumper must allow for this time difference before resorting to use of his reserve chute.

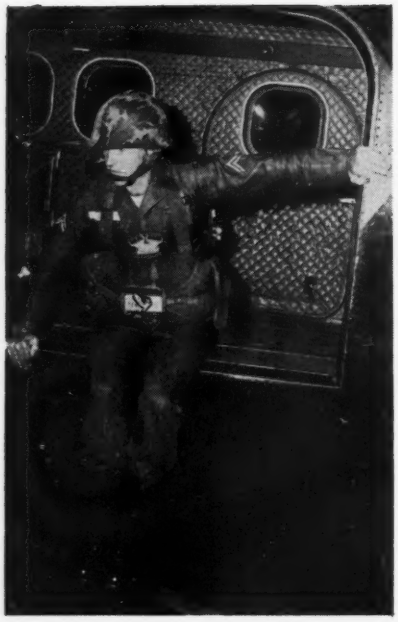
The parachutist cannot jump safely from a hovering helicopter. The downwash from the rotor blades could invert the canopy, or push the paratrooper into the static line or lines of preceding troopers, causing serious malfunction of the parachute and possible injury or death. But this downwash is nullified if forward speeds are maintained. On the other hand, if the helicopter moves forward too fast, the paratrooper is in danger of being thrown into the landing gear or other parts of the aircraft. Therefore, it is necessary to set minimum and maximum speeds for each type of helicopter.

At present only seven Army aircraft are used in parachute dropping: the U-6A, U-1A, UH-19, CH-21, CH-34, UH-1A, and CV-2A. Others could be used but at present these are the only approved ones. The UH-1A and CV-2B still have restrictions in some operational areas.

The U-6A (Beaver) has a capacity of four paratroopers. The port door is removed and a strap is installed as the anchor line through two tie-down rings behind the copilot's seat. The rear seats are removed so the troops can sit facing each other. The troops hook up their static lines as soon as they enter the aircraft. One minute from the drop zone, the first man sits in the door. Ten to fifteen seconds from the release point, he stands on the step and leans forward, holding the wing strut with his right hand. At the release point, he snaps into a good compact body position as he falls downward away from the aircraft. The other troops follow in the same manner at 1-2 second intervals. A safety NCO in the copilot's seat then leans back and recovers all the static lines and deployment bags.

The U-1A (Otter) is usually restricted to sticks of five troops. Again the port door is removed and the edge taped to eliminate sharp edges. An anchor line is installed along the starboard side, forward of the door. The troops sit on the seats facing forward, two port and three starboard. As the aircraft approaches the drop zone, on the

Parachutists may leave the U-6 from a standing or sitting position. Only the port door is used for jumping. Due to the cramped space, only experienced parachutists jump from the Beaver.



Jump position from the Otter

Due to limited head room of the jump door in the Chickasaw, jumpers must exit from a sitting position. Same position can be used when jumping from the CH-21.

jumpmaster's command, the troops stand up and put the seats up against the wall. They hook up and sit on the floor facing the port side of the aircraft. One minute from the release point, the first man sits in the door and leans out to make his safety check. He exits by pushing himself away from the aircraft and assuming a normal exit position. The other personnel follow by scooting across the floor, being careful not to become entangled in the other static lines.

The UH-19 (Chickasaw) will carry five paratroopers who exit from the cargo door. The exit is made from a sitting position similar to that used in the U-1A. The troops shuffle on their feet to the door and sit down when they reach the number two position. An anchor line cable is placed along the starboard side to the rear of the door.

The CH-21 (Shawnee) helicopter will carry up to 16 paratroopers, and the CH-34 (Choctaw) will carry 12 paratroopers. But in the CH-21 the number is usally reduced to ten or fewer by climatic conditions and fuel weight. In both aircraft an anchor line cable is installed along the floor on the starboard side of the aircraft. The right front cargo door is used as the jump door. No more than ten troops can jump in one pass because of the length of the cargo compartment. In jumping, each man must stoop in the door because of its low height. He makes a weak exit straight out instead of the vigorous up and out exit taught for Air Force aircraft.

The UH-1A has not received final clearance to be used for static line drops. It has the capability of carrying five paratroopers. The troops hook up as they enter to an anchor line cable attached to the rear wall of the cargo compartment. Four men sit along the rear wall and the jumpmaster normally sits behind the pilot, exiting first or last as he sees fit. The exit is made by assuming a sitting position in the door and pushing away with the hands. Whenever there is no crewchief, a safety NCO must be provided to retrieve the static lines and deployment bags.

In addition to carrying light vehicles, the CV-2A (Caribou) can carry 24 parachutists. It has been thoroughly tested but has not yet received final jump clearance. Troops can exit from the side doors or from the ramp. The ramp has proved preferable because the side doors are very low and require an awkward (stand in the door) position. The ramp exit is made by hooking up to an anchor line cable which runs from the front to rear of the cargo compartment and then walking each in turn down the ramp and stepping off the end.

Another position used in jumping from CH-21. The forward door is used.

Due to low height of doors in CH-21 (shown) and the CH-34, the jumper must stoop to exit.

Jumping from the UH-1. Note that the feet are firmly planted on the landing skid.

All the aircraft listed above have proved very useful in the accomplishment of small unit missions. Their small size and cramped compartments often limit the size of the unit and require greater safety precautions but this has not been a serious problem.

When using the ramp to jump from the CV-2A, the parachutist takes three steps down the incline. The third step will clear him of the aircraft.

Helicopter Marker Panels

THE FOLLOWING paragraph appeared in the WEEKLY SUMMARY of Army Aircraft Accidents, Incidents, and Forced Landings of 27 May-2 June 1963:

"Five Army helicopters have been damaged during the past year by marker panels. Most of the damage occurs when the marker panels are drawn into the rotor blades. This is usually caused by improperly secured panels or the practice of landing directly on panels. While terrain and local conditions must determine marker panel locations, these panels should always be firmly anchored and aviators should know that landings are not to be made on the panels. More costly and unnecessary panel accidents can be expected unless aviation and ground support personnel are properly indoctrinated. USABAAR would like to have your solution for this problem."

Among the suggested solutions that came in were these:

CAUTION NOTICE

Suggest all panels now issued to troops, in stock and procured in the future be stenciled in large contrasting letters on the "up" side with a caution notice informing using personnel of the hazards of improper securing of panels.

The following is a suggested format for this caution notice:

THIS PANEL MUST BE SECURELY ANCHORED TO SURFACE TO PREVENT BEING BLOWN INTO HELICOPTER ROTOR BLADES. SECURE TO GROUND ONLY WITH FIRMLY DRIVEN STAKES. *DO NOT* ATTEMPT TO ANCHOR BY PLACING ROCKS OR OTHER MATERIALS ON TOP OF PANEL.

Suggest an appropriate aviation support activity be designated for each major command to perform stenciling of panels now in the hands of troops and in local stocks.

Recommend compliance with this requirement be included in Command Maintenance Readiness Inspections or other appropriate materiel inspections until all panels have been marked.

CWO Robert L. Eastland
4th Aviation Company
4th Infantry Division
Fort Lewis, Washington

PIERCED STEEL PLANKING

We took PSP and painted it brown on one side, for winter, and white on the other, for summer. These were still hard to see during the spring months. But if we painted them white on one side and international orange on the other, I know we could see them all the time.

The PSP is light enough to be manhandled and heavy enough not to be picked up by the helicopter winds. The size of the PSP can be as large as the present panel marker or larger. We use the regular length of PSP. They work very satisfactorily.

We would appreciate any better solution to the problem.

1st Lt Joseph A. Drew
Aviation Platoon, 1st Brigade
7th Infantry Division
APO 7

I have just finished reading your article on marker panels in the WEEKLY SUMMARY. Due to personal experience in Korea, I sympathize with you and would like to tell you of actions taken by an aviation company to improve this condition.

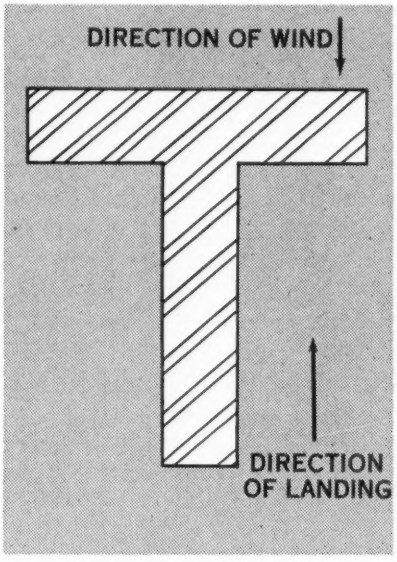
The 1st Cavalry Division completely eliminated the using of cloth marker panels. Instead, we used PSP panels painted OD on one side and international orange on the other side. Due to the weight of the panels, this eliminates the problem with the rotor blades.

We also took the precaution of not landing near panels.

1st Lt Phillip C. Ashley
Aviation Officer
5th Missile Battalion (N-H)
56th Artillery
Wilmington, Ohio

RUCKSACKS, DAY-GLO

Here are several ideas that have been tested and are currently being used by this unit.



In USARAL a large percentage of our flying is conducted under conditions of blowing snow and poor visibility. This includes external sling loads which greatly increase the visibility problem. Under these conditions, it is a near necessity to have panels to land by. An example would be carrying a pack 75mm howitzer externally into a landing zone on a frozen lake covered with fresh, loose snow.

The majority of the ground troops in this command are issued rucksacks with steel frames. A fluorescent panel tied securely on the back of the rucksack makes an excellent landing panel. The 35 pound plus weight of these markers is immune to even the most determined rotor wash.

A further procedure, the tactical situation permitting, is to tie these Day-Glo panels on the front of the pathfinder guides (worn like a vest). The guides then stand on the intended landing point for the chopper—moving out of the way as the pilot starts to terminate his approach. This works especially well with sling loads, if the load position is marked with a rucksack panel. Wooden paddles covered with fluorescent tape will work nearly as well as using a vest panel on the guide to signal the pilot. A heavy duffle bag, combat pack, GP bag, etc., should be a satisfactory replacement for the rucksack in other areas.

Capt Morris M. Jessup
Executive Officer
80th Transportation Company
APO 949

SPRAY PAINT

I am currently assigned to the Aviation Section of the 937th Engineer Co. (Avn) IAGS, Chile Project. . . .

Marker panels were a source of continual difficulty when operating in the field, especially in the mountains. We have solved the problem by the use of canned spray paints. Results are equal to or better than cloth panels. We can vary the color of the paint to suit the terrain; it is easy to apply; it does not have to be recovered; and it is as secure as the terrain it is applied to. The advantages are numerous.

Some standardization of the item might make it available in the supply system. At the present time we purchase the paint with local funds.

Capt Maurice F. Dougherty
IAGS, Chile Project
U. S. Embassy
Santiago, Chile

PIERCED ALUMINUM PLANKING

. . . I urge you to consider what we have required here at Fort Bragg for going on to six years:

the use of PAP suitably marked. It makes sense.

Lt Gen Hamilton H. Howze
Commanding General
XVIII Airborne Corps and
Fort Bragg

General Howze inclosed the following instruction sheet for fabricating PAP markers:

FABRICATION AND USE OF PAP HELIPAD MARKERS

1. *Fabrication:*

a. Helipad markers will consist of two pieces of Pierced Aluminum Planking (PAP), each six feet in length and approximately 22 inches in width.

b. One side of the panel will be painted with no more than two easily identifiable colors and of design at the units' discretion. The other side of the panels will be appropriately camouflaged. To preclude duplication of colors, designs will require the approval of headquarters.

c. Pierced Aluminum Planking (PAP) is an Engineer item available in the supply system which may be procured from local funds. Reference: DA Supply Bulletin 5-5-55-10, -55, -30, and -5600, dated April 1961.

2. *Tactical Use of Markers:*

a. Panels will be used as identification markers, wind tees, and touchdown points for helicopters (see illustration).

b. Panels will normally be displayed with camouflage side up.

c. When a helicopter approaches and is identified, the panels will be turned over to show the unit identity and to indicate the direction of landing (into the wind) and with approach free of obstacles.

d. Panels will be turned with camouflage side up as soon as possible after landing.

* * *

This variety of solutions to the problem of helicopter marker panels suggests that no single type of marker will serve for *all* types of terrain and operating conditions. We hope that you may find the answer to your particular circumstances in these replies. We further hope that, regardless of the type panel used, you will:

Thoroughly indoctrinate ground and aircrew personnel in its correct use.

Ensure that panels are securely anchored or heavy enough to resist the strongest rotor wash.

Insist that no landings be made directly *on* panels.

Even modern accident investigation procedures have not succeeded in eliminating the inference that the aviator involved in an accident is guilty

Until Proven Innocent

Colonel John F. Sharp, USAF

WHEN A YOUNG doctor hangs out his shingle with an M. D. behind his name, it is to the public a symbol of trust. A recognized group of professionals has passed judgment on *his* professional capability and has declared him trustworthy. He is now capable and has the authority to diagnose, make decisions, and perform surgery on human beings.

Assuming now, that all human beings have a built-in "mistake factor," our young doctor may some day make the mistake that will result in tragedy. In such an event, his status as an M. D. enjoys a certain degree of immunity from the irate public or relatives. This protection was created by the same group of professionals who made him and is strongly supported by his associates and colleagues. No matter what the charge, this doctor is innocent until proven guilty—guilty beyond doubt of either gross negligence or a deliberate act in violation of his Hippocratic Oath. His professional associates will be the first to hang him if such acts are proven, but he will never be brought to task for an honest mistake.

Our profession enjoys the same recognition of trust. A group of professionals make our young officers and rate them "aircraft pilots." They are now considered trustworthy and capable of making decisions and flying our multi-million dollar equipment. But here is where the similarity ends. If one of our boys makes a mistake, a completely different attitude seems to prevail.

Visualize a young lad sliding down the runway with the rollers neatly tucked up under the wings. His mistake factor caught up with him in the worst way, and our "anger factor" has been ignited and fanned in the worst way. Then somebody explodes, "How stupid can you get!" And in a flash our young professional has become an idiot. Under such extreme circumstances, his associates are inclined to criticize, denounce, and make authoritative statements based on assumption and their own qualifications.

The above example seems pretty well cut and dried, but the same attitude often prevails when we encounter accidents which are not so easily defined—those which are loaded with gray areas, speculation, and probable causes. Critical speculation often points to probable pilot mistakes, and before we know it everybody believes it and, committed or not, his actions carry the same "stupid" connotation in normal conversation. Under these circumstances, even before the investigation is under way, our pilot is by inference GUILTY until proven *innocent.*

Preconceived convictions are the investigator's worst enemy. It's hard to convince oneself that there might be a legitimate reason for an obvious "heads-up" boner. But worse yet is the trumpeting voice of the self-appointed "investigator-at-large" who, knowing a minimum of facts, voices premature and unqualified opinions for the world to hear.

Why can't we as professional associates of the "accused" offer the same consideration and understanding the young doctor enjoys from his colleagues? I'm sure we can with a little thought. Tread cautiously on premature speculation and conclusions in the wake of an aircraft accident, lest we defeat our own purpose. Our purpose is to eliminate exposure to error, and quite often a pure and simple pilot error mishap can be traced to a substandard procedure. We can always redesign a procedure, but just try to redesign a guy's judgment!

Reprinted from an editorial in INTERCEPTOR magazine by Colonel John F. Sharp, Chief of Safety, Air Defense Command.

Norman L. Horton

WHO *is an aviation safety officer?*

THE UNITED STATES Army has had a safety program ever since someone told George Washington to "Sit down in the boat." As a matter of fact, this person might be called the first safety officer in the United States Army. He recognized a potentially dangerous situation, and he did something about it.

Before we can discuss much about *who* is an aviation safety officer, it may be best to describe *what* is an aviation safety officer.

Taking first things first, what is SAFETY? Safety might best be described as *the ability to accomplish the mission with a minimum avoidable loss of men and materials.*

There are several schools of thought on the best approach to safety education. A few years ago a full color movie about death on the highways was exhibited throughout the country. The horrible details of death and dismemberment were repeated on the screen time after time. This picture may have achieved some measure of success in driver safety. It did instill a bone chilling fear in all operators of motor vehicles for a while. This may serve an industrial complex in safety education, but such an approach is not compatible with the requirements of an aviation program.

There must be a different approach to aviation safety. This approach should be one of instilling operator confidence. The program is basically one of education. This requires *positive* action and could more properly be called accident prevention rather than safety. The 1st Armored Division has taken cognizance of this difference between the two approaches and they no longer call their air safety officers by that title. They are now known as aviation accident prevention officers. Whether you agree with the nomenclature or not, it does reflect the positive attitude.

When you consider the job as an aviation accident prevention job rather than aviation safety, the scope broadens. We can see in "accident prevention" more than a "Do Not" program. The name itself suggests *positive* action. In fact, it requires *positive* action.

Mr. Horton is a lecturer, Aerospace Safety Division, University of Southern California.

Three key words can put this program in effect:

Professionalism,

Organization,

Pride.

Not necessarily in that order, but that makes them easy to remember: P. O. P.

Let's define these terms before we go any further.

ORGANIZATION

The mission assigned to any unit must be real and vital. An aerial logistics supply unit has a mission which is vital. They deliver the goods or someone will starve or perhaps die for lack of ammunition or fuel. But a post aviation unit without a combat or tactical mission may have a solitary goal of 500 flight hours per month. Rain or shine they have to score 500 hours or bust. A lot of this flying is going to be just "boring holes in the sky" under these conditions. There is a vast difference between 500 hours of training and one hour of training 500 times.

There must be a positive and clearcut assignment of responsibility and authority. If an operating unit is held *responsible* for the completion of a mission but they are not given *full authority* to do so, only confusion will result. This leads to complete frustration on the part of the operating troops. Wherever responsibility is assigned, complete authority *must* go with it. Staff must not usurp the responsibility of command by assignment of specific aircraft and pilots for specific missions. Staff must not require mission accomplishment beyond the capabilities of the aircraft and pilots assigned. It just might not be a good idea to launch an O-1A when even the sea gulls are walking.

There must be a clear and open chain of command from the bottom to the top, and it must be a channel for continous communication up and down. Each man must have only one boss, one supervisor. There should be no division of command where the mission is concerned. An aviation unit assigned a tactical mission and hard pressed to fulfill its requirement should not be further harassed by being forced into the position of a convenient aerial taxi service for everyone on the post senior to the aviation unit.

PROFESSIONALISM

Professionalism is simply the efficient accomplishment of the mission. This means that:

Personnel know their jobs. They are professionals.

Wasted motion not essential to the mission is cut to a minimum.

Confusion is completely eliminated.

PRIDE

Once the above two items are achieved, that is, organization is logically completed and the mission is clear and professionally achieved, the third key word is the inevitable: PRIDE—pride in the organization, pride in the division, pride in the Army, pride in the United States.

United Air Lines has a working motto: "Any job professionally done is inherently safe." Think about that for a moment and you will see that if you are 100 percent successful in organization, professionalism, and pride, your unit will not require the fulltime services of an aviation accident prevention officer because you have eliminated most of his job and your accident rate will approach zero.

But we do have accidents. Why? One good reason is that so much collective human effort is put in the manufacture and operation of today's complicated and sophisticated aircraft, that positive inspection, quality control, and s u p e r v i s i o n throughout this process is not economically reasonable. Therefore, something *will* fail somewhere, sometime.

It has been said, "Every accident, no matter how minor, is a failure of organization." This may be hard to accept, but a little thinking on the subject will prove its validity. No matter what kind of an accident you can recall, someone, somewhere made a mistake which allowed that accident to happen.

One of the primary missions of organization is to eliminate mistakes. Therefore, a proper organization, a perfect organization, will not tolerate human errors of omission or commission. But, being human, we *do* make mistakes. Thus, the Army has aviation accident prevention

officers or aviation safety officers (take your choice), and we must define this job. Unfortunately, this man has a lot to do—more than one man should normally be required to accomplish. His sole duty is to ensure the commander that his assigned missions are professionally accomplished, and, if not, where corrective action must be concentrated.

Stop a minute and consider your own organization. Then go back and review the mission, the duty, the sole duty of the aircraft accident prevention officer. Would it keep him busy? Decidedly. Probably 26 hours a day, 8 days a week! Immediately two more questions come to mind: Where should this billet fit into your organization and what kind of man is required to fill this billet?

Let's look more specifically at a few of the duties of the aircraft accident prevention officer as outlined by Brig Gen Delk M. Oden.

Maintain intercommand liaison to implement aviation safety programs.

Coordinate safety aspects of operations involving aircraft ground handling and assisting in resolving related safety problems.

Observe flight and ground operations of aircraft to detect and correct unsafe practices.

Advise and assist the Aircraft Accident Investigation Board.

Review reports of aircraft accidents and initiate corrective action when required.

Establish and maintain an effective pre-accident plan as outlined in DA Pamphlet 95-5.

Conduct surveys of facilities to ensure that communications equipment, navigational aids, and other electronic aids to aircraft operation meet designed operational requirement.

Inspect physical status of airfields for conditions affecting safety and recommend improvements pertaining to airfield lighting, runways, taxiway requirements, and other facilities.

Disseminate pertinent flight safety literature and develop programs to promote its reading and understanding by responsible personnel.

Maintain adequate files of aviation safety material and instruction for ready reference.

Maintain organizational aircraft accident records and statistics.

Review aviator flight records and unit training program to ensure that training is designed and carried out to overcome deficiencies.

Two more duties are added to this list by DA Pam 95-9.

Occasionally ride as a check pilot with aircrews to determine standardization and safety practices among aircraft teams.

Monitor techniques and proficiency of aircrews in handling weapons and ammunition.

The mere carrying out of any one of these duties may keep a man fairly busy in a large organization.

Ten weeks of training at the University of Southern California will certainly help an AAPO to accomplish his mission and ease the burden of his duties. But aviation accident prevention officers cannot be manufactured. When students come to USC they must arrive with certain prerequisites. To become proficient as an accident prevention officer, he must have:

Avid curiosity about all phases of aviation, maintenance, training, personnel, operations, ordnance and all subjects as they pertain to his organization.

An *analytical mind* so that he

may visualize possibilities and correlate evidence pertinent to his field.

Infinite patience. This in itself is a short definition of genius.

Perseverance. He must carry through to logical solutions regardless of roadblocks, administrative or otherwise.

Tact and diplomacy. He must inspire confidence and respect from those with whom he deals, both senior and junior. In this sense, he too must be a real professional.

Absolute integrity. He must be above influence from any source, especially himself and his own preconceived notions. He must never resort to conjecture or guesswork.

Sound judgment. Once all the above have been accomplished, he must be able to judge the results and weigh each conclusion.

Experience, for which there is no substitute. Now, this includes experience in aviation. He must be a good, experienced, and preferably mature pilot. Mature does not necessarily mean chronologically old; rather, he must be able to profit from his own experience and that of others. Here again there is an appropriate saying, "You must be able to profit from the mistakes of others. . . . You can't possibly live long enough to make them all yourself."

Communications Skill. He begins with a real desire to learn and follows through with effective and timely sharing of his experiences with others.

Is that all that is required of an AAPO? No. In addition to the above characteristics, he must have certain talents.

He must be a good pilot, an exceptional pilot if possible.

He must be a diplomat and psychologist.

He must be a metallurgist. He must be able to talk about fatigue, stress, etc.

He must be a structural engineer since he must be able to reassemble the aircraft after a crash.

He must be an aeronautical engineer. Why? Because he must be able to understand the aerodynamic forces that were acting on the aircraft at all times.

He must be a pretty good chemist, since he has to deal with chemical laboratories, talk their language about the oil, fuel, hydraulic oil, and alcohol samples that must be analyzed.

He should be a pretty good mechanic because he must be able to understand why engines run and why they might not run. All he may have is the evidence of a smashed engine after the crash.

He must be a pretty good electrician. He has to be able to determine whether or not the fire was caused electrically or by other means. He must be able to trace all circuits of the aircraft after a crash and to determine whether or not they were carrying current prior to the crash.

He must be a pretty good electronics man since he must be able to understand radio, the navigational and engine instruments, so he can tell whether or not they may have contributed to the crash.

He must be a pathologist since he must talk to flight surgeons in their vocabulary. He must be able to understand post mortem analysis and the human factor causes in aircraft accidents.

At this point you may say this cannot possibly be done . . . no one man can acquire in one lifetime all of the above talents and operate them efficiently. You're right, but a good aviation accident prevention officer must be able to speak the languages of the specialists listed above. He must be able to call on expert advice. He must be able to recognize who is an expert. He must be able to use these experts and at the same time discriminate among them.

Where does this man fit into an organization? The discussion of the duties of the ASO shows nothing less than command responsibility. Of course, *all* responsibility eventually settles on the shoulders of command. But AR 385-10 definitely charges command with the responsibility for the safe operation of aircraft. This mission is so vital to successful operation of units that the duties of safety should not be delegated too far down the line. Ideally, the ASO or AAPO should be the direct extension of the eyes and ears of command and should have immediate and direct access thereto. Under some conditions this may not be feasible. However, in any organization command should strive to separate AAPO duties from any other staff or operational function.

Well, who is this superman—this Capt Thomas A. Edison, this Maj Leonardo da Vinci, this Lt Napoleon Bonaparte? Is he anyone special? Yes he is. But then again, no! He is a commissioned officer of the United States Army! He could be you. You are your own accident prevention officer. You as a pilot are the one man who can save your life. In addition, you are your brother's keeper. Just because you walked away from the aircraft after the last flight doesn't mean your responsibility ends at that point. Write up each discrepancy. Write it up clearly! Write it up completely! Write it up truthfully!

To borrow a phrase from Smoky the Bear, "Remember, only *you* can prevent aircraft accidents."

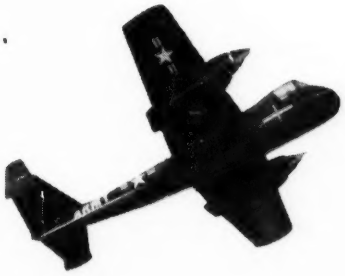
crash sense

PREPARED BY THE U.S. ARMY BOARD FOR AVIATION ACCIDENT RESEARCH

TREE TOP ROLL

The Mission: The flight was a training flight. Acrobatics -- loops and aileron rolls -- and contour flying were to be demonstrated. **The Weather:** As reported by a pilot in the vicinity, the ceiling was 5,500 feet, broken. **First Witness (former Navy enlisted man):** "...we were going south and saw the plane maneuvering slightly west of the little town and my

companion and
I saw this airplane make
two perfect loops. And on the
last one it came down in a vertical
dive, or partially, and seemed to attempt
to level out. It was in somewhat level flight
at the last we saw it , when it disappeared
over the wooded area. In a few moments
we saw the black smoke from the crash."
Question: "What was your Naval
occupation?" **Witness:** "I was
a flight engineer for four
years in World War II
on several different
type aircraft..."

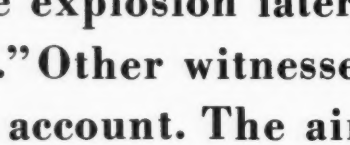


Second Witness (farmer):
"...we noticed the plane buzz out from behind the timber and turn up pretty sharp, turn on over, get flat on its back, fly just a piece, and then it began to straighten out, angling off, coming toward the ground all the time. ...so it just angled on out and about when it came in behind the timber from us, it looked like he had it fairly well straightened up, but then it hit."

Third Witness (farmer):

"The plane came up from behind the trees about an angle such as it was taking off, flipped over on its back. It flew for just a short time on its back, tried to correct itself, and started losing altitude, and in corrected position went down out of sight behind the trees. We saw no smoke or anything out of the ordinary and the engine appeared to be running fine, and seemed to be running

about full throttle. All this happened very quickly. He didn't seem to have backed off the throttle during the entire time. And of course when it went out of the line of sight, we heard an explosion and saw the fireball. We saw the fireball first and heard the explosion later, and black smoke came from it." Other witnesses gave substantially the same account. The aircraft first attracted attention by completing two loops below the clouds. The back side of the second loop was flown in a much steeper dive than the first. This dive was held until the aircraft pulled out and began contour flying, travelling



at a very high speed. It continued approximately 5 - 6 miles southwest where it was seen to suddenly pitch up and enter a roll type maneuver. At the near inverted position, the nose pitched down and the aircraft, still rolling, descended rapidly and was lost from sight behind the trees. It struck the trees in a left bank(25-30 degrees), nose low (10 - 15 degrees) attitude and crashed to the ground where it exploded, scattering a wide trail of debris for several hundred feet. Two questions immediately pop into mind after an accident of this type. Was there a mechanical failure or malfunction? Could the pilot have blacked out or suffered some type of seizure? It is unlikely that we will ever have full and complete answers for these questions. Accident probers assembled what was left of control linkages

and found no malfunction or failure that was not caused by impact or fire. However, some of the control linkages were destroyed in the crash and could not be analyzed. The manner in which the propellers were bent and other evidence indicated full power was being delivered by both engines at the time of impact. There were no indications of physical defects in either the instructor pilot or the pilot.

BUT THIS MUCH WE DO KNOW–

—THIS ACCIDENT ADDS UP TO FOUR LIVES AND TWO $900,000.00 AIRCRAFT LOST DURING LOW LEVEL ROLLS!

Continued from page 1

tion type equipment. Referring to TA 21 gave us the answer. TA 21 does not list such items as computers, plotters, individual survival equipment (such as a knife), nor a pilot's clipboard. A search of the TAs revealed that the computer is authorized by TA 7-1. No authority could be found for the other items.

Under what authority am I authorized to be issued the above mentioned items on a catgeory III aviation assignment?

WILFRED H. WITTEKIND
Captain, Infantry
Fort Ord, Calif.

● *As an Army Aviator on a category III assignment (see paragraph 5-(1)a, AR 600-105 dated 21 August 59) you are on flight status and should be issued full allowance of flight clothing and flight equipment. These items should be available through normal supply channels in accordance with TA 21 (peace).*

With reference to the other equipment, several small items such as plotters, clipboards, etc. are expendable and are not listed in TAs. However, the organization supply officer should control such issues. At present there is no authority for individual survival equipment. If and when it is authorized, it will be in TA 21.

There could be exceptions to any AR or TA. As an example, if you are drawing flight pay—maybe getting the minimum time—you should be issued full allowances of equipment. The important thing is to protect the interest of Uncle Sam. That is "use flight equipment only for flying."

Sir:

I read the "Pigskin" article [February '63 DIGEST] with great interest. It is a fine policy to wear gloves when flying, and one which I have stressed as most important for protection and survival. HOWEVER, the flight gloves issued by the Army are as maneuverable and well fitting as a pair of sixteen ounce boxing gloves!

I can't imagine who designed this glove (to be worn with wool inserts) and expected a pilot to maintain full throttle control and coordination when flex-wing flying. My gloves are Navy type, tight fitting, thin, pliable, and I don't twist 90 degrees before the throttle responds.

We are making great strides with our new aircraft and armed capability, but where in the hell is survival equipment? Decent gloves—we scrounge! Knives—we scrounge! Survival kits—we scrounge! We beg, borrow, and steal from our sister services the items which are essential to safe flight and survival.

Gentlemen, the articles on survival equipment are well written. Now let's get aviation survival gear out of the Neuport age and into the Hummingbird era. (Instead of spending two years developing solely an Army product, don't you suppose that we could take some advice (and product) from our space-age compatriots?)

Well written, Mr. Coleman, but if you're looking to Army Aviation channels for proper survival equipment, your article is *at least* two years premature.

WILLIAM H. LUTHER
Captain, Infantry
Post Aviation Safety Officer
Fort Huachuca, Ariz.

● *Looks like relief is on the way: the Aviation Combat Developments Agency has forwarded recommendation that USAF lightweight gloves, FSN 0415-068-7849, be provided each aviator in addition to the present intermediate weight gloves.*

Sir:

. . . In the interval following a crash, an individual, if conscious and free, can make an escape attempt—assuming that he has not been poisoned by carbon monoxide, carbon dioxide, frozen by fear, or caught fire. It is this last point with which this discussion is concerned.

Design engineers have started locating fuel cells away from engines as well as away from aircraft occupants. Also studies have been made which resulted in fuel cells being located away from the aircraft's probable point of impact. More research is being done on the construction of fuel tanks and fuel lines in an attempt to seal the fuel, and in some cases to throw the entire cell as far from the crash scene as possible. [See inside back cover, DIGEST, July 1960 and "Crashed and Burned," Dec 1961.] Potential ignition sources are being analyzed as well. Honeycombed cells are being tested (to prevent "spray"), and both the Air Force and the Flight Safety Foundation are currently studying a method whereby, in case of an emergency, fuel can be quickly converted to a gelatinous, noninflammable mass. In short, something is being done about reducing deaths due to crash fires.

Logically, one might ask, Is there anything else that can be done? The answer is a firm "Yes!"

The crash helmet, among its other attributes, is one step that has been taken in the protective field. . . .

Two additional items must be mentioned. One is the use of gloves, which are not generally fire resistant, but do possess the ability to withstand fire for a limited time. Gloves should be worn in all aircraft at all times.

The second item is a thorny one: flight suits.

The Army needs an improved fire-resistant flight suit, and, most important, the aviator should not be subject to such stringent clothing regulations that the wearing of a flight suit becomes an intolerable inconvenience.

This is not the case today. Is it because commanders do not realize that a simple piece of cloth can be the difference between life and death or, at best, horribly disfiguring scars?

Many aviators have seen this problem and countless times have suggested a field flying suit (O.D. of course) that would not offend the commander's desire to maintain uniformity of clothing. What has been the result of these complaints? Nothing.

The flying suit should be worn every time aviation personnel enter an aircraft, if for no other reason than fire alone. One long look at a friend who has burned to death, or who has run from a crash in a mass of flames will prove it beyond a shadow of a doubt.

How many more such tragedies will it take to accomplish what is nothing more than common sense—a fire-resistant flight suit?

GARY V. DENNISON
Captain, Infantry
4th Avn Co, Ft Lewis, Wash.

CH-54s Bought for Test and Evaluation

THE ARMY is purchasing a number of CH-54s (S-64 Skycranes) from Sikorsky Aircraft Division of the United Aircraft Corporation for military test and evaluation. Deliveries of the twin turbine-powered aircraft are expected in the fall of 1964.

The CH-54A will be used primarily for the airlift of heavy equipment. Specific jobs will include retrieval of aircraft and missiles, towing of mired vehicles, transport of vans or pods to serve as repair shops, command posts or hospital units, and transport and placement of bridge spans.

Interest in the CH-54A stems from two years of demonstrations of Sikorsky's piston-powered S-60 flying crane (see DIGEST, Nov 1959).

The CH-54A is powered by two Pratt & Whitney Aircraft JFTD-12 turboshaft engines of 4,050 horsepower each. Its lift capacity ranges from six tons for hauls up to 200 miles to about 9 tons for short ranges.

This aircraft normally carries a crew of two but has provisions to haul three more. S-64 pilots will enjoy a unique feature—the ability to control the aircraft while facing aft. Installed within the crew's compartment and back of the copilot's normal position are a separate seat and set of flight controls from which the S-64 can be maneuvered while the pilot is facing rearward toward the cargo.

Rucker Adds 14-Hour E&E Course to POI

Boondock thrashing, boot slogging realism will keynote the evasion and escape course planned by the Department of Tactics, USAAVNS, as an extension of the present aviator survival training conducted at Fort Rucker.

Fourteen hours of evading "aggressor" troops in dense pine forest and swampland will be added to the program of instruction this month. Under the direction of the Survival Committee, Department of Tactics, the training will be conducted west of Lake Tholocco, an area of often near impenetrable undergrowth and swamp, closely approximating terrain in parts of the Republic of Vietnam.

Student aviators now spend 8 hours in the survival area learning and applying basic survival techniques. The new program calls for this instruction to be preceded by 2 hours of classroom work and followed by the evasion and escape problem.

Provided with a map, compass, canteen, poncho, knife, and snakebite kit, students will be released in pairs at a simulated crash site. They will then travel cross-country to a predesignated helicopter pickup point and rendezvous with "friendly partisan" support troops.

The problem will emphasize practical application of evasion techniques. Eluding "aggressor" support troops will be the students' prime concern. Although the area abounds in wildlife—from rattlesnakes to deer—food, and sleep, will be on an if-there's-time basis.

It is anticipated that the average student will take 8 hours or more of hard traveling to reach the helicopter pickup point, if he is successful in evading capture. Most of the problem will be conducted at night, in terrain which is difficult enough to traverse in daytime.

Survival committee officers say that when a student completes the training, "He will have put in a couple of days of demanding physical and mental exertion."

Object of the instruction will be to give the graduating aviator a firm foundation in basic survival methods, prepare him for the eventualities of cold war operations, and to give him an idea of the determination needed to evade capture and survive.